

# Air Conditioning & Refrigeration News

The Newspaper of the Industry

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News  
Member Audit Bureau of Circulations. Member Associated Business Papers.

Written to Be Read on Arrival

VOL. 26, No. 7, SERIAL NO. 517  
ISSUED EVERY WEDNESDAYEntered as second-class  
matter Aug. 1, 1927

DETROIT, MICHIGAN, FEBRUARY 15, 1939

Copyright, 1939, by  
Business News Pub. Co.FOUR DOLLARS PER YEAR  
TWENTY CENTS PER COPY

## 13 Distributors Join Utility For N.Y. Sales Drive

**'Replace Every Old Icebox In N. Y. Area' Is Theme; Allowances Offered**

NEW YORK CITY—After a couple of weeks of uncertainty as to just how many companies would be participants, Consolidated Edison Co.'s spring refrigerator drive this week appeared to be pretty much settled as a real "cooperative" affair.

E. F. Jeffe, vice president of the utility, announced that 13 manufacturers would participate in the drive, which will begin March 20 and end July 31. Up to the time of this announcement, only four companies—Crosley, Electrolux, Stewart-Warner, and Universal (Landers, Frary & Clark)—had been listed as definitely "in on" the promotion.

Differences between the Edison company and distributors, apparently over the question of fixing wholesale prices on sales to apartment house owners and other "quantity" buyers, were ironed out last week after a series of closed meetings. Counter-proposals were submitted by distributors, and were said to line up fairly well with the Edison plan in all but a few particulars.

Settlement of the rift between the utility and distributors was made easier by the presence in New York, for consultation, of refrigerator executives of National Electrical Manufacturers Association members, whose advice and approval was essential to any agreement of a definite sort.

Theme of the cooperative campaign will be "Replace Every Old Icebox In N. Y. Area," according to Jeffe.

## Northern California '38 Sales Reported

SAN FRANCISCO—The electric range furnished the bright spot in the San Francisco territorial sales picture last year, reports of dealers to the local sales department of Pacific Gas & Electric Co. revealed. While electric refrigerator sales fell off rather sharply from 13,072 units in 1937 to 9,543 last year, electric range sales went up from a 1937 mark of 123 units to a total of 144 in 1938.

Radio sales also were up last year.

## Legg Says Dealers See Sales Gain Over 25%

PORTLAND, Ore.—With distributors and dealers saying it with orders, the 1939 sales outlook for the electric refrigeration industry appears even brighter at present than it did a month ago, in the opinion of Ray Legg, Leonard general sales manager.

Arriving here to participate in a sales conference sponsored by Electrical Distributing, Inc., Leonard distributor, Mr. Legg said that "distributors at 14 important points from coast to coast, where we have already held meetings, are almost unanimous in their belief that our original estimates of a 20 to 25% increase in the electric refrigeration business during 1939 are too conservative."

"Practically every Leonard distributor has increased his orders—and these increases are exceeding the quotas the factory has set up as appearing possible," he declared.

"Distributors and dealers believe they are going to have a year of substantial improvement over 1938. Their attitude reflects a tremendously improved state of mind on the part of the buying public."

## Philadelphia Sales Show 1938 Retail Volume Off 44%

PHILADELPHIA—Sales of household refrigerators by members of the Electrical Association of Philadelphia dropped 44% last year, from 71,544 to 40,391 units, but average unit price was up to \$176 from a 1937 mark of \$175, according to a compilation of dealers' reports.

Retail value of dealer sales also dropped 44% during the year, amounting to \$7,111,234 as compared with \$12,534,463 in 1937.

Sales by Philadelphia Electric Co. during the year amounted to 3,223 units, a decline of 37% from the 5,056 units sold by the utility in 1937. Dollar value of utility sales was off 38%, totaling \$630,672, against \$1,006,977 the year before. Utility sales alone represent about 8% of the year's total.

(Concluded on Page 2, Column 4)

## Wisconsin Power Co. To Rely on Dealers

MILWAUKEE—Refrigerator prospects will "fill in the missing headline" to qualify for some \$500 in cash certificates in this year's spring cooperative campaign for dealers sponsored by Wisconsin Electric Power Co.

The refrigerator campaign will open about April 1, and will head the list of cooperative promotions planned for the year, dealers and contractors were told at a recent meeting, sponsored by Wisconsin Radio, Refrigeration & Appliance Association, the Electrical League of Milwaukee, and the Electrical Contractors' Association.

This year's "missing headline" contest will be modeled along the lines of the "quiz type" contests, currently popular. As was the case in last year's "gift of the month" promotions, advertisements in the drive will be without coupons, to get prospects into dealers' stores for entry blanks.

Encouraging to dealers at the meeting was the power company's announcement that it has planned its 1939 promotions with the idea of diverting the overwhelming share of appliance business to independent merchandisers.

Dealers were told that the utility company expects them to sell 10,000 to the 11,200 refrigerator quota set for Milwaukee this year; 1,900 of the 3,000 electric range quota for 1939; 1,000 of the 1,500 water heaters; 22,500 of the 25,000 electric roasters; and 14,000 of the 22,000 "better-sight" lamps.

(Concluded on Page 16, Column 1)

## Philco To Show All Lines at Conclave

PALM BEACH, Fla.—Philco distributors and field men will see more than new refrigerator models during their national convention here Feb. 16 through 19. Besides looking over new Conservador models, they will preview a new series of air-conditioning units, and inspect Philco's new line of dry batteries.

Plans for augmenting Philco's radio line and campaign also will be announced at the meeting, in addition to advertising and merchandising plans for the new products, says President Larry E. Gubb.

Expansion of Philco into other industries does not mean that it will lessen its activities in radio, Mr. Gubb asserts.

"It does mean that we consider that there will be a very substantial economic upswing during 1939, making it a propitious time for a healthy expansion," he declares. "We believe we have something very definite to contribute to the industries in which we are going to be engaged."

## Reports Show Year-End Gains In Both Commercial Units & Air Conditioning

WASHINGTON, D. C.—Hinting at a brighter outlook for 1939, dollar volume of sales by members of Air Conditioning Manufacturers' Association during last December rose 60% above sales for the final month of 1937 to reach a total of \$3,331,000, compared to \$2,081,670 recorded for the tail-end month of 1937.

Despite this smashing finish, however, total sales for the entire year of 1938 were 37% below those of 1937.

In announcing the December increase, W. B. Henderson, A.C.M.A.'s executive vice president, pointed out that most of the larger installations are normally contracted for during this month and the early months of each year, so that the systems will be in operation by the time summer and hot weather arrive.

## January Conditioner Sales Up In Chicago

CHICAGO—Sales of central station air-conditioning systems here in January more than doubled, both in number and capacity, those made during the same month last year, Commonwealth Edison Co. reports.

Contracts for 15 installations, with a combined capacity of 402 hp., were signed last month, compared with the six systems, having an aggregate capacity of 196 hp., sold in January, 1938.

Systems sold last month fall in the following classifications:

Food stores	5
Restaurants	3
Candy factories	2
General offices	2
Theaters	1
Recreation parlors	1
Shoe stores	1

## Churches Enter War On Price Cutting

NEWARK, N. J.—"Elimination of price cutting and unfair business tactics" by encouraging "cooperation between consumer and retailer" is one of the recommendations in a tentative eight-point program for improving the spiritual, intellectual, and physical service of the Universalist church to the community.

The program is the result of a series of nine recent "churchmanship clinics" here and in other northern New Jersey communities.

Rev. Dr. Roger F. Etz, pastor of Newark's Universalist Church of the Redeemer, originated the "churchmanship clinics" as a means of ascertaining public opinion on a church program capable of meeting current needs. Ideas and suggestions were invited from people in all walks of life.

## 6 New Distributors Named By Leonard

DETROIT—Six new distributors of Leonard electric refrigerators have been appointed by Ray Legg, general sales manager.

A. H. Marshall Co., Inc., Plattsburg, N. Y., will handle the company's products in northern New York. A. H. Marshall is president of the company. Other officers are John C. Agnew, vice president; Nelson F. Johnson, treasurer; and G. D. Southwick, secretary.

Otasco Supply Co., Tulsa, Okla., will distribute Leonards throughout Oklahoma and in a small area of Arkansas. Officers of the company are M. Sanditen, president; S. M. Sanditen, vice president; and E. G. Sanditen, sales manager. The company operates 39 stores in Oklahoma, and has 27 associate stores in Oklahoma and Kansas.

Magic City Appliance Co., Birmingham, Ala., will cover the northern

(Concluded on Page 16, Column 1)

DETROIT—Continuing the gains over comparative 1937 months started early last fall, world shipments of commercial refrigeration and air-conditioning equipment by member-manufacturers of National Electrical Manufacturers Association totaled 8,025 units during December, to pass by a good margin the 7,291 units sold in December, 1937.

Despite the progress of the year-end months toward taking up the slack, however, world shipments for the year were approximately 26% under the total for 1937, amounting to 184,631 units as compared with 250,964 in the previous year.

Encouraging as regards future sales prospects were December sales of the "packaged" commercial refrigeration units and self-contained air conditioners, nearly all of which surpassed comparative 1937 totals.

Ice cream cabinets led the list numerically, with a total of 1,460 units reported for the month as against 1,251 in December, 1937. Both pressure and bottle type water coolers were over 1937 totals for the period, reports showing shipments of 738 pressure water coolers and 234

(Concluded on Page 16, Column 4)

## Kelvinator Re-Opens Plant; Union's Own Fight Closed It

DETROIT, Feb. 14—Kelvinator's Plymouth Road plant was closed briefly today by order of company officials, after a sit-down had been called as a result of an inter-union dispute among plant workers, but was scheduled to be reopened at 7 a.m. Wednesday following settlement of the difficulty.

According to Kelvinator officials, the plant was shut down by management order after an inter-union dispute in which members of Mechanics Educational Society of America had thrown out of the plant a sub-foreman who had refused to pay his union dues.

They emphasized that it was a wrangle between union members themselves which caused the shut-down, and that there was no issue of the difficulty.

(Concluded on Page 2, Column 4)

## Continental Again Has 2-Compartment Line

FOND DU LAC, Wis.—"Air conditioning" through controlled temperature, humidity, and air circulation, and facilities for the storage of frozen foods, stand out as the features of top models in the 1939 line of "Continental" domestic refrigerators, announced here by Continental Corp., division of Sanitary Refrigerator Co.

Seven models in three series comprise the new Continental line. The three models in the "Super" series, highest priced and most elaborate refrigerators in the line, are of 7, 8.5, and 10-cu. ft. capacity; the "Deluxe," or medium range models, are available in 6 and 7-cu. ft. capacities; the leader model, bearing the name "Coldayr," are made in 4 and 6-cu. ft. sizes.

Licensed under the Potter patents, the "Super" models have two separate compartments, one large "air-conditioned" chamber for general food storage and a smaller compartment for the fast-freezing of foods.

The main compartment of the box is held at temperatures varying from 40 to 50° F. by means of a large freezing coil. Beads of moisture which form on this coil are caught in a porcelain drip tray and serve to moisten the cold circulating air so the humidity within the box is

(Concluded on Page 2, Column 4)

## New Norge Unit Features Use of 2 Refrigerants

**Higher Humidities, Lower Temperatures Claimed For New System**

DETROIT—A new refrigerating system, the "C/M Synchronizer," that makes use of two refrigerants and is claimed to afford lower temperatures and higher relative humidities, is being spotlighted in Norge's 1939 household electric refrigerator line.

Three series of refrigerators comprise the Norge line: the "C/M Synchronizer," in models of 5, 6, and 8-cu. ft. capacity; the "Marathon," in the same sizes; the "Gold Seal," in models of 3, 4, 5, and 6-cu. ft. capacity. Supplementing these is the "Thirty-Niner," a model of 6-cu. ft. size designed to sell competitively in the lower-income brackets.

Norge is also introducing its first hermetically sealed unit, which is employed in the "Gold Seal" line and the "Thirty-Niner" model.

Outstanding advantage of the "C/M Synchronizer," according to Norge engineers, is that by means of a blend of two refrigerants it is able to deliver a temperature of less than 40°, and at the same time maintain the relatively high humidity that is essential to keeping foods in prime fresh condition over a long period.

The model uses the Rollator compressor, now termed the "Duo-Rollator" because of the dual purpose of high humidity and low temperature which it is said to serve.

Two refrigerants are circulated through the compressor and the rest of the system as a mixture, whose concentration varies at different parts of the system. Thus two different temperatures are produced in the cooling unit, with but one liquid feed control, it is claimed.

In general, it is said, the "C/M Synchronizer" duplicates the results obtained in the previous Norge "Low Temp" models, but is simpler in design and can therefore be sold at lower prices.

Exteriors of the refrigerators have been redesigned in the modern manner. They are finished in white porcelain enamel with a black recessed base. Attractive new paneling down the front adds to appearance. Hardware has been newly designed, with the "Lazilatch" easy door-opening feature being retained, and

(Concluded on Page 8, Column 1)

## 'Scotch Eskimo' May Be Nation-Wide Symbol

NEW YORK CITY—The "Scotch Eskimo" refrigerator campaign, introduced successfully by distributors here in a cooperative drive about a year ago, will be available at a nominal cost for use by dealer or utility groups in cities throughout the country, members of the Refrigeration Division of National Electrical Manufacturers Association decided at their meeting here.

Using the "so safe . . . so swift . . . so simple" theme originated for Nema's initial test drives in southwestern cities in the fall of 1936, last year's New York drive added the "Scotch Eskimo," to personify safe food preservation at low cost.

Although curtailed before its originally set span, the drive was said to have helped sales materially, even in the face of "recession" buying backwardness.

Details for making the campaign material available on a nation-wide basis are now being worked out, and a formal announcement is expected soon.

Dishwashers may be the subject

(Concluded on Page 16, Column 5)



## Philadelphia Dealers Sold 40,391 Refrigerators In 1938 at an Average Price of \$176

Month	1938 Units Sold	1937 Units Sold	1936 Units Sold	1938% Inc. Or Decrease Over 1937	1938 Retail Value	1937 Retail Value	1938% Inc. Or Decrease Over 1937	1938 Average Price	1937 Average Price
January	3,123	3,135	2,532	-4%	\$ 564,097	\$ 524,071	+ 8%	\$180	\$167
February	3,797	6,119	3,657	-38%	664,574	1,076,607	-39%	176	175
March	4,826	9,051	7,668	-47%	848,012	1,570,635	-46%	175	173
April	5,861	9,452	9,870	-38%	1,037,313	1,638,226	-38%	176	173
May	4,812	9,743	9,911	-51%	832,319	1,695,279	-51%	173	174
June	3,623	9,103	6,641	-61%	627,475	1,608,916	-61%	173	177
July	3,237	7,435	6,409	-57%	575,856	1,312,554	-57%	178	176
August	3,936	4,725	3,951	-17%	693,344	838,164	-17%	177	177
September	2,617	3,762	3,591	-31%	457,278	640,713	-29%	175	170
October	1,697	2,456	2,695	-31%	295,848	420,742	-30%	173	171
November	1,494	3,323	3,165	-56%	265,480	600,496	-57%	178	180
December	1,368	3,240	3,714	-58%	249,638	608,060	-59%	183	187
<b>Totals</b>	<b>40,391</b>	<b>71,544</b>	<b>63,804</b>	<b>-44%</b>	<b>\$7,111,234</b>	<b>\$12,534,463</b>	<b>-44%</b>	<b>\$176</b>	<b>\$175</b>

### Sales By Philadelphia Electric Co.

Month	1938 Units Sold	1937 Units Sold	1936 Units Sold	1938% Inc. Or Decrease Over 1937	1938 Retail Value	1937 Retail Value	1938% Inc. Or Decrease Over 1937	1938 Average Price	1937 Average Price
January	83	96	81	-14%	\$ 13,514	\$ 18,290	-27%	\$163	\$190
February	222	191	160	+16%	41,414	36,658	+12%	186	192
March	316	457	372	-31%	58,148	87,763	-34%	184	192
April	458	869	810	-43%	86,546	157,812	-45%	189	195
May	514	892	867	-42%	100,123	177,393	-44%	194	198
June	395	850	768	-54%	79,693	172,633	-54%	200	203
July	357	623	625	-43%	71,205	128,175	-45%	199	206
August	385	500	426	-23%	78,820	102,259	-23%	204	204
September	224	288	297	-22%	45,820	57,885	-21%	204	200
October	115	118	133	-3%	22,644	22,855	-1%	196	194
November	59	83	126	-29%	13,080	16,719	-22%	221	200
December	95	149	128	-37%	19,665	28,535	-32%	207	191
<b>Totals</b>	<b>3,223</b>	<b>5,056</b>	<b>4,793</b>	<b>-37%</b>	<b>\$ 630,672</b>	<b>\$ 1,006,977</b>	<b>-38%</b>	<b>\$195</b>	<b>\$199</b>

Note: Utility sales approximate 8% of total sales. Report covers sales in Philadelphia, Bucks, Montgomery, Delaware, and Chester counties. Report includes sales of the following makes: Apex, Coldspot, Crosley, Frigidaire, General Electric, Hotpoint, Kelvinator, Leonard, Norge, Stewart-Warner, and Westinghouse.

## APPLIANCE SELLING IS EASIER WITH G-E MOTORS for 2 REASONS



### Consumer Acceptance

APPLIANCE owners have been satisfied with G-E motors so many years that prospects are quick to accept them. Not only are G-E motors immediate proof of dependable electric equipment, but they are another indication that your appliances are of high quality. See—below—the results of impartial surveys that show this public acceptance of G-E products.

### Customers Buy from You Again

YOU know the value of satisfied customers—they return for other purchases. In addition, they're your best advertisements.

You can be sure that G-E motors will please your customers in every respect. They are quiet. They are mounted in rubber. Their rotors are inherently well balanced and are correctly designed. Moreover, these motors do not interfere with radio reception.

They're economical, too. Built of high-quality materials, these sturdy motors give many years of trouble-free service. Wearing parts are few and are designed for years of operation. Also, G-E motors make friends because they do not require attention except oiling once a year. General Electric, Schenectady, N. Y.



More than a million G-E capacitor-motors are now in use on domestic refrigerators

#### DEALERS

A leading publisher recently sent a questionnaire to electric-appliance dealers and department stores. One question was: "What makes—or brands—of electric motors, in your opinion, would make it easier for you to sell appliances?"

84% said General Electric  
66% said Manufacturer A  
26% said Manufacturer B

#### HOUSEWIVES

When shown different brands of lamps, housewives were asked: "If you were buying lamps, which of these would you accept?"

City Choosing G-E  
Cleveland... 93 out of 112  
Cincinnati... 77 out of 99  
Columbus... 49 out of 60  
Detroit... 65 out of 75  
Indianapolis... 70 out of 75  
Pittsburgh... 28 out of 61  
382 out of 477—80%—chose General Electric

#### MOTOR BUYERS

"Taking into consideration quality, price, and service, when you are next in the market for motors and control, which manufacturer will you ask for quotations?"

The first choice of 10,000 buyers:  
55.5% General Electric  
20.0% Manufacturer A  
2.7% Manufacturer B  
2.0% Manufacturer C  
1.6% Manufacturer D  
18.2% All Others

#### AVERAGE BUYERS

People in "Middletown" (Muncie, Ind.) were asked, among other questions:

"Which companies, in your opinion, give buyers good value for their money?"  
324 out of 486—66.6%—mentioned General Electric.

# GENERAL ELECTRIC

## Philadelphia Record Shows Price Held Up

(Concluded from Page 1, Column 2)

Average price of units sold by the utility, however, while dropping to \$195 after a 1937 high of \$199, was nevertheless considerably higher than that for dealers as a whole.

Comparatively, January was the best month for dealer sales, the 3,123 units sold in that month being but .4% under the 3,135 units sold in 1937. Next best month was August, when sales of 3,936 units dropped 17% under the 1937 mark of 4,725.

In number of units sold, April was the leader, with 5,861 units. This compared with 9,452 in 1937, however, and was a drop of 38%.

Best month for utility sales was February, when the 222 units sold brought figures 16% above comparative marks for the previous year, 191 units. Highest sales month was May, when 514 units were sold.

The report covers sales in Philadelphia, Bucks, Montgomery, Delaware, and Chester counties, and includes sales of Apex, Coldspot, Crosley, Frigidaire, General Electric, Hotpoint, Kelvinator, Leonard, Norge, Stewart-Warner, and Westinghouse units.

## Union's Own Argument Causes Short Strike At Kelvinator

(Concluded from Page 1, Column 4)

regarding wages, working hours, or any other matter between Kelvinator and the M.E.S.A. involved. The sub-foreman in question had been originally ejected from the plant by union members last Friday, company officials said, and was thrown out again today when he reported for work. When he insisted on coming back, however, union members sat down in protest.

So the company shut off the power, closed down the plant, and sent all non-sitdowners home for the day.

Differences were settled at a union conference this afternoon in Hotel Statler, in which Kelvinator representatives participated by invitation, and it was decided to resume work as usual Wednesday morning.

## Fast-Freeze Section In Continental Models

(Concluded from Page 1, Column 4)

kept at 70 to 90%, the company claims. This unit requires no regular defrosting, it is said. Surplus moisture from the coil drains into a glass jar located in the bottle bin at the bottom of the refrigerator.

The fast-freezing compartment is refrigerated by means of a freezing plate operated at a temperature of -5 to -10° F. From 45 to 55 lbs. of meat may be stored in this compartment, it is claimed.

The 7-cu. ft. model in the "Deluxe" line has provision for 15 lbs. of frozen meat storage in the evaporator in addition to two trays of ice cubes. The other models have no frozen food facilities.

All rubber grids and a glass vegetable dish and gasket are furnished with "Super" models; models in the "Deluxe" series come equipped with two rubber grids and a set of green glassware.

## Kitchen Contest Rewards Visits To Showroom

BIRMINGHAM, Ala.—With \$700 in cash prizes as the bait, Birmingham Gas Co. this month is repeating its "Better Kitchen Contest" in cooperation with a dozen dealers.

Aimed to draw prospects into dealer showrooms, the contest offers prizes to the women's clubs who induce most members to visit dealerships, and who buy the most appliances. A visit to the showroom tallies 1,000 votes for the club, and purchasers get 2,000 votes for each dollar spent. A \$50 range thus earns 100,000 votes for the club.

Traffic-building value of the contest was proved last year, when dealers credited it with stepping up sales some 50%.

## THE COLD CANVASS

By B. T. Umor

### A 'Whale' of an Idea For the N. Y. Fair

Remember Salesman Moran who sold a refrigerator to an Eskimo and brought a chunk of ice back from the frozen North and sold it at a profit? He's after bigger game now.

He wants to exhibit a huge live whale at the New York World's Fair. To make it pay he proposes painting advertisements on the whale's back, so that every time the behemoth comes up to spout, the spectators can glimpse the copy displayed on the mass of blubber.

Sounds like a goofy stunt, but don't be surprised if you pay to see that whale sporting displays this summer. This guy Moran comes through on the damndest schemes.

### 'Staggered' Payments

Extreme in instalment selling: A Louisiana drug store chain sells as little as a pint of liquor on the instalment plan. Sort of a "stagger" system.

### Perils of Travel Way Back In '28

Back in 1928, when air travel was still somewhat of an adventure and electric refrigeration was a fast-growing youngster, L. H. Miller of G-E and Publisher Cockrell were in a party making a promotional air jaunt to carry the refrigerator gospel into the Georgia Power country.

"Believe me we had our troubles," reflected Mr. Miller. He told of how on the takeoff the cloud buggy's tail was so loaded with "Monitor Top" literature it refused to budge from terra firma.

Never daunted, the party unloaded the business ballast, took the air and pointed for Atlanta. The flight wasn't exactly as the crow flies, for Mr. Miller recalls that he was drafted to plot the course.

"The payoff," he chuckled, "was that the only instrument I used was an ordinary roadmap." Peering over the panorama, he had to pick the way from highways, railroads, and a large hunk of luck.

Circling above what they were sure must be at least Buenos Aires, they decided to land and ask the natives for a meal and directions.

"But strangely enough," finished the pathfinder for the trip, "there on the field stood the beaming Georgia Power officials waiting to welcome the intrepid ambassadors of refrigeration."

### Warmed-Over Poppa

From Sherman, Texas a reporter sends a story that contained this startling mis-statement concerning a utility's home range demonstrations—"If the homemaker is willing, a complete meal will be prepared and cooked with herself and her family included."

Can't you hear Pa saying, "Time to fatten up Junior for the holidays."

## MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS

The most efficient and economical equipment available for handling refrigerators safely and without scratching or marring. Pad is separate from harness and both adjustable to all styles and sizes of cabinets.

Efficient, sturdy, easily applied. Name of refrigerator automatically lettered on pad without charge.

Adjustable Pad \$5.30  
Adjustable Harness \$6.00

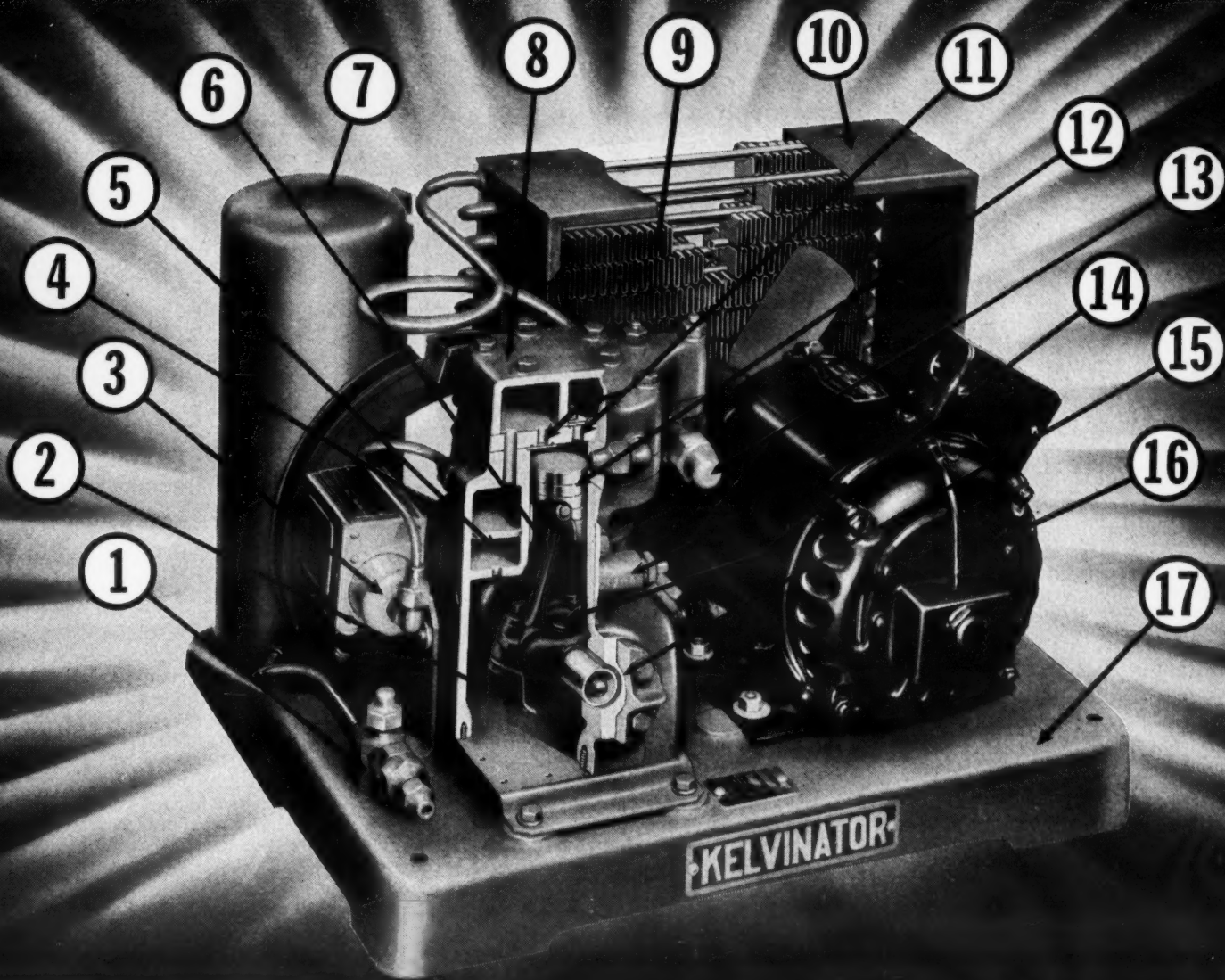
Write for literature and prices on pads for refrigerators, washers, ironers, range-top radios, etc.

Pat. Appl. Pending

BEARSE MANUFACTURING CO.  
3815-3825 Cortland Street, Chicago, Illinois  
Incorporated 1921



# "Charged with 25 Years' Experience"



## KELVINATOR NEW SILVER JUBILEE CONDENSING UNITS!

**LIGHTS! CAMERA!** It's here... the line of condensing units you can cheer for... better still—sell! Culminating achievement of Kelvinator's 25-year-old "stepping out" policy... that also steps up *your* profits.

Distributors look both ways. Back over the quarter century that has made such splendid improvements possible. Ahead to the certainty that Kelvinator can be counted on to keep up the good work. And *now* they accept the Silver Jubilee Condensing Unit line as evidence that Kelvinator has done it again.

For here's an engineering *achievement!* Scan the list of features if you doubt it. Count up all the profit advantages these units deliver. *You* know. Do prospects want "last word" refrigeration? The Ayes have it!

Money-saving new features. Greater ease of service and installation. Units require average of 12½% less floor space and 21% less head room. Balanced design. Just the right size of motor, block and condenser. *Performance* against *price*—that's an age-old argument—now Kelvinator gives you both.

Let us tell you more... coupon right here.

### FEATURES OF NEW SILVER JUBILEE CONDENSING UNITS

1. **LIQUID LINE VALVE**—Easily accessible, with cleanable strainer to protect system.
2. **LUBRICATION**—Crankshaft and connecting rod bearings by oil bath, piston and piston pin by oil splash.
3. **PRESSURE CONTROL**—Automatic low pressure type on ¼ and ½ H. P. models; dual pressure control with high pressure cut-out on ½ H. P. models and over.
4. **COMPRESSOR SEAL**—Easily accessible, balanced bellows-type not affected by high suction pressures. Refrigerant seal and seat removable without removing crankshaft.
5. **SUCTION MANIFOLD**—Separates returning oil from refrigerant gas and keeps oil in the crankcase, preventing "oil slugging."
6. **CONNECTING RODS**—With extra large bearing surface on crankshaft to assure a uniform bearing pressure that will maintain a proper lubricating film.
7. **LIQUID RECEIVER**—Vertical, seamless steel shell. Equipped with fusible safety plug.
8. **CYLINDER HEAD**—High-grade cast iron, easily removable without disturbing refrigerant lines, on all models larger than ¼ H. P.
9. **CONDENSER**—Large, copper-finned condenser of continuous-tube type. Forced air circulation by fan mounted on motor pulley; additional fan blades on compressor pulley, 1 H. P. and over.
10. **CONDENSER SHROUD**—Heavy skirted steel shroud surrounding condenser, belt and pulleys for maximum rigidity and safety.
11. **VALVES**—Both suction and discharge valves mounted on one valve plate in the cylinder head for greater efficiency, more trouble-free operation and easy

accessibility. Flat reed-type valves are made of high-grade Swedish steel. Valve seat accurately ground and lapped. Discharge valves provided with oil relief spring.

12. **PISTONS**—High-grade specially formulated cast iron with ground finish, equipped with oil grooves up to and including ¾ H. P.; piston rings in all other models. All pistons selectively fitted to cylinders.

13. **SERVICE VALVES**—Two-way type, provided with gauge connections.

14. **CRANKSHAFT**—Extra heavy, drop-forged heat treated steel with extra large diameter bearing surfaces which are ground to within 2/10,000" limits. In exact perpendicular alignment with piston bore for even bearing load distribution.

15. **MAIN CRANKSHAFT BEARINGS**—Extra heavy bronze, with large diameter and surface, diamond-bored and grooved for perfect lubrication.

16. **MOTOR**—Heavy duty refrigeration type capable of withstanding heavy overloads; high starting torque and low current consumption. Motors have large oil wells packed with wool yarn for perfect lubrication. Single phase A. C. motors are condenser start on ¼ H. P., and repulsion induction motors from ½ H. P. up. Polyphase motors are squirrel cage induction type; D. C. motors compound wound. Automatic overload protection on all models; automatic reset on ¼, ½ and ½ H. P. (single phase A. C. motors).

17. **BASE**—Compact, one-piece cast iron base, heavily ribbed for extra strength and rigidity.

#### FREON-12 REFRIGERANT

Odorless, non-toxic, non-inflammable and efficient.



# Kelvinator

## COMMERCIAL REFRIGERATION



KELVINATOR, Division of Nash-Kelvinator Corporation,  
Dept. K-27, 14250 Plymouth Road, Detroit, Mich.

Gentlemen:

I have an open mind. Send more information  
on Kelvinator Silver Jubilee Condensing Units.

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_



## An All-Industry Attack on Replacement Market & Return To Basic Selling Appeals Called Path To Better Refrigerator Sales

### Intensive Market Study Says Drive on Low-Income Buyer Has Failed & Boldly Suggests a New Plan

"The New Profit Opportunity in the Automatic Refrigeration Business" is a market study by Arthur Hirose and Don Parsons of the McCall Corp., publishers of McCall's Magazine and Redbook Magazine, made with the help of facts and figures from the National Electrical Manufacturers Association, The Edison Electric Institute, the Modern Kitchen Bureau, AIR CONDITIONING & REFRIGERATION NEWS, Electrical Merchandising, Electrical World, the National Resources Committee, and other sources. The study was made for and presented to a meeting of the Refrigeration Section of the National Electrical Manufacturers Association in Chicago.

The study is divided into three parts (1) What has happened (2) What is happening and (3) What will probably happen in the automatic refrigeration business.

#### Refrigeration Compared With Other Appliances

In terms of what has happened, yearly sales of household electric refrigerators, in units, have risen from 75,000 in the year 1925 to 2,369,025 in the year 1937.

Again in terms of what has happened, the refrigerator, a relatively high priced appliance, with an average retail price of \$173, ranks third in 1937 appliance sales, in units, being exceeded only by electric irons and electric clocks. The number of refrigerators sold in 1937 exceeded the sales of toasters, clothes washers, vacuum cleaners, waffle irons, coffee makers, heating pads, hot plates and grills, sandwich toasters, mixers, heaters and radiators for home use,

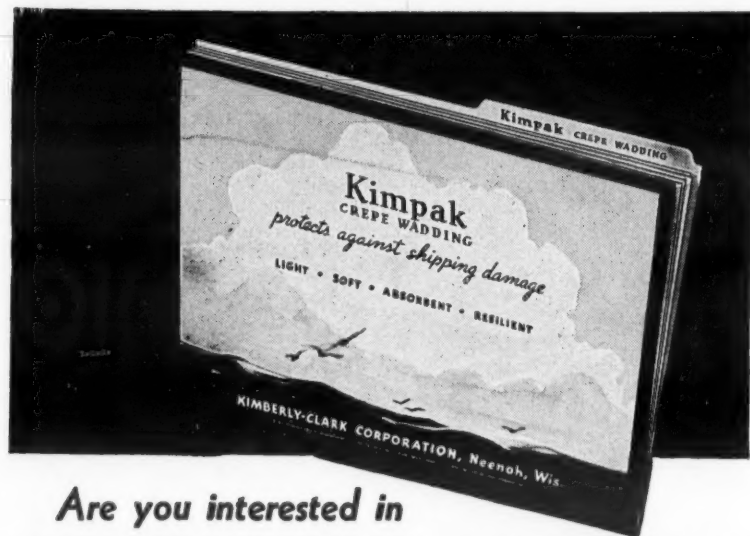
electric ranges, roasters, oil burners, ironing machines, water heaters, domestic coal stokers, and cookers and casseroles.

Again in terms of what has happened in the household electric refrigerator business, we find that household electric refrigeration saturation, compared with electrically wired homes, increased from 4% at the end of the year 1927 to 49% at the end of the year 1937. Therefore, there were 11,271,000 used electric refrigerators as of Jan. 1, 1938.

Comparing the household electric refrigerator's unsold initial market with that of other appliances, we find that electric refrigerators have saturated their initial market to a greater degree than all other electrical appliances except the iron, washer, and toaster.

To the uninitiated, however, the figure that 50.6% of electrically wired homes have no refrigerators is somewhat deceptive. Electric toasters have been available to Mrs. Housewife for over 30 years. They can be bought at any variety store and many drug stores, and yet 47% of American families own no electric toaster. You can say that the other people do not like toasters.

Then let us go to vacuum cleaners and we find that 51.2% of America's electrically wired homes have no vacuum cleaners. You may say that many people, particularly in the South, have no rugs and so have no need for vacuum cleaners. You can then move on to electric clocks. You would think that everybody wanted the accurate time given by electric clocks—yet, despite the low price of electric clocks, 55.6% of America's wired homes had no electric clocks as of the first of January, 1938.



Are you interested in  
**PRODUCT (Packing) PROTECTION?**  
Then send TODAY for  
this **FREE Portfolio**

● Protect the eye-appeal of your products with KIMPAK® Crepe Wadding. Guard against jolts in transit that can cause scratching and marring of fine metal and enamel surfaces—or chipping and breaking of more fragile items. Then your merchandise will reach dealers in first-class condition—ready for immediate display on the sales floor. That means quicker turnover for your dealers and increased profits for you.

KIMPAK is as easy to use as a piece of string—will increase shipping room efficiency. There's a convenient size and form to

solve most packing problems. It is free of dirt or grit and other scratchy foreign substances. Find out for yourself how KIMPAK can solve your packing problems. Send coupon today for your FREE copy of the new portfolio with complete descriptions and samples. Address nearest sales office.

#### INVESTIGATE KIMSUL

Thermal insulation for full cabinet or filler strip treatment "K"-factor .27 B. t. u. flexible, low density, moisture and fungus resistant, low cost. Samples and data on request.

**Kimpak**  
CREPE WADDING

REG. U. S. PAT. OFF. & FOREIGN COUNTRIES

**KIMBERLY-CLARK CORPORATION, Neenah, Wisconsin**

Sales Offices:  
8 S. Michigan Ave., Chicago—510 W. 6th St., Los Angeles—122 E. 42nd St., New York City

**FREE! 1939 Portfolio of Kimpak**  
Kimberly-Clark Corp., Neenah, Wis.  
Please send us the 1939 PORTFOLIO OF KIMPAK. AC 2-15

Company \_\_\_\_\_  
Address \_\_\_\_\_  
Attention of \_\_\_\_\_  
Our product is \_\_\_\_\_

#### First Publication of Hirose Survey

At the close of 1938 Arthur Hirose, director of research for McCall's Magazine, concluded an important study of the market for household appliances, with especial reference to the replacement market. This study presented interesting and substantial proof to controvert the widely accepted theory that prices must be driven lower and lower because the market consists of progressively lower income groups.

For some time Mr. Hirose's study was available only to major manufacturing executives. It was presented, however, to Stewart-Warner distributors at their convention in January, at which time a stenographic record of the presentation was made.

After some delay, this stenographic transcript was obtained by the editor, who attended the convention, and is presented herewith for the first time to the industry at large.

The facts in this study were considered so important by a number of executives that they have been the basis for considerable 1939 policy-making, and hence deserve to be called to the attention of the entire industry.

It is apparent, therefore, that the initial market for electric refrigerators in no way approaches 100% of the wired homes.

Again in terms of what has happened, until now, nothing could stop the upward sweep of electric refrigerator sales year by year, not even the heavy hand of depression years. With the exception of kerosene refrigerators, on which no figures are available, although we know that sales are small, 3,210,000 household refrigerators were sold in 1937. Seventy-three and eight-tenths per cent of these refrigerators, or 2,370,000 units, were electric refrigerators. Six hundred thousand units, or 18.7% of the total, were household ice boxes, and the remaining 7½% of the total sales in 1937 were accounted for by the 240,000 gas operated household refrigerators sold in that year.

It is interesting to compare the percentage of sales increase, in units, 1937 over 1936 for the three major types of household refrigerators. Electric refrigerator sales increased 18.9%, household gas refrigerator sales increased 20%, and household ice refrigerator sales increased 50%, comparing 1937 with 1936.

Coming down to the present day, we find that 1938 household electric refrigerator sales by manufacturers probably declined to slightly below 1934 levels. Although at this time sales figures for the complete year of 1938 are not available, it is apparent on the basis of monthly figures already available that in the entire year 1938, some 1,250,000 electric refrigerators were sold, or a drop of over 1,000,000 from the 2,369,000 sold in the year 1937.

Sales for the year 1934 were approximately 1,280,000 household refrigerators. Therefore, as the refrigeration industry enters the year 1939, manufacturer sales in 1938 have probably been off about 45% from 1937 sales. Because of a large carry-over of about 600,000 units at the beginning of 1938, retail sales for that year are probably off about 30% from 1937 sales.

Most refrigerator manufacturers made less money in 1938 and their distributors and dealers also made less money and are none too happy.

#### How Sales Progressed By Income Classes

What should the refrigerator industry do in 1939 in terms of design and development work, manufacturing, pricing, selling, and advertising and promotion?

Before the refrigeration industry plans for the future, let's look back and see the lessons of our past history—remembering that the path we've traveled to some extent must govern our future course,—but remembering, too, that men and industries can change conditions if they will.

This is the path that household automatic refrigeration has traveled.

When the industry first started out to sell household automatic refrigerators, its market was all American families or homes with electricity. Since that time, electric service has increased and today there are about 23,000,000 wired homes in America.

First the industry sold the high income homes. Because an electric refrigerator did not retail for less than \$400 until the year 1926, the industry's first sales were made to the higher income homes of America. Today it's pretty well conceded that

almost all high income homes in America own some sort of an automatic refrigerator—either electric or gas.

The second step was selling the middle income homes. After the industry had sold electric refrigerators to the rich, it directed its selling efforts to the middle income families of America. With average prices declining from over \$300 to less than \$200 a box and with large promotion and advertising, the refrigeration industry reaped its richest reward among the middle income families.

Unfortunately, the industry lessened its efforts against the great middle income homes of America and today not all of them own automatic refrigerators. No wonder the household electric refrigeration industry made its largest stride in the years it concentrated on the high and middle income families, because these two groups always furnish industry with its volume market on relatively high priced merchandise.

The high and middle income families of America are those who have enough income to pay income tax. Analyses made from the recent Consumer Purchase Study of the government show that the upper half of American families outbuy the lower half by more than two to one.

#### Evidence of Failure In Low-Income Market

After selling the high income homes of America electric refrigerators and making efforts to sell the middle income families of America, some of the manufacturers in the refrigeration industry made a mistake. Instead of plugging away at the great middle income market, some of the manufacturers, with average prices of their product still over \$160 at retail, attempted to sell the low income homes. Some sales were made, but the attempt on the whole was a failure.

The attempt to sell automatic refrigerators to low income families was doomed to failure despite low or no down payments and the long terms which government agencies introduced into refrigerator selling. Reverts—repossessions—were inevitable, because unfortunately, the low income families have too little income to start with. And when jobs are lost or wages cut, the payments on the refrigerator must cease.

It is true that during the past year, losses were cut by cutting terms from 36 to 30 months and by raising down payments, but these moves were in themselves an admission that a smaller refrigerator market existed among low income families than was expected.

Speaking of the refrigeration industry's attempts to sell low income homes, the Illinois-Iowa Power Co. in its Load Builder said: "The low-bracket folks are not responding to special sales of refrigerators directed at them."

AIR CONDITIONING & REFRIGERATION NEWS, in an editorial speaking of the increase in repossessions, said: "In some of the larger industrial centers, where men were laid off by the thousands, instalment payments dropped and reverts increased. Some of the smaller refrigeration dealers haven't had sufficient capital to go ahead as a result of these repossessions."

The President of the United States may not have realized how right he was when he said: "One-third of the nation is ill-fed, ill-clothed, and ill-

housed." However, the new government studies on income prove this statement. The National Resources Committee of the Government (Departments of Agriculture, Interior, Commerce, Labor, etc.) has just released figures on consumer income in 1935-1936, showing the income of all American families and individuals living alone. When we divide these figures on income by thirds into the customary high income, middle income, and low income picture, we find that the upper third has incomes of \$1,450 and over, the middle third has incomes of \$780 to \$1,450 a year, and the lower third has incomes of less than \$780 a year.

While the total income received by each of these three groups is not too significant, because sales must be made to individual families and not to groups, the figures show that the upper third receives about two-thirds of all income. The middle third receives about one-quarter of all income, and the lower third receives only 10% of all family income.

However, the average incomes which families receive tell a far more significant story. The upper third has an average yearly cash income of \$3,000, which is ample to buy a refrigerator. The middle third has average yearly cash incomes of \$1,076, and this sum will go far particularly when families live outside the big city and have a lower living cost.

However, the lower third receives average cash incomes of only \$471. Four hundred and seventy-one dollars is only \$9 a week and we defy anybody to buy an automatic refrigerator on \$9 a week after paying out of that \$9 a week for the essentials of food, clothes, rent, and household operations. Dr. Isador Lubin of the U. S. Bureau of Labor Statistics told us at the recent Boston conference on distribution: "The millions of wage earning families in the United States who get less than \$1,250 a year might represent a market of \$50,000,000 to the refrigerator industry if each family had only \$2 more income per day." So for the lack of \$2 per day, this \$50,000,000 market does not exist.

Many marketing men, considering the amount of income received by the low income families as a group, fail to realize that no matter how much money the low income families have when they're all put together, automatic refrigerators must be sold to individual families and not to groups or families. So, unless the refrigeration industry can persuade Mrs. Capafarello, Mrs. Sullivan, Mrs. Cohen, and Mrs. Rastus Brown, to get together and buy one refrigerator among them, there seems to be no hope of selling new automatic refrigerators to many of the low income homes.

#### Some Facts & Figures on Replacement Opportunity

Where then can the electric refrigerator industry sell next? Fortunately, though the low income families offer no real market for automatic refrigeration, it must be remembered that every survey shows that not all middle income families have yet been sold automatic refrigerators, and developments in the year just past point to a brand new profit opportunity in the refrigeration business. This is the replacement market, or sell a new box to families who now own an old automatic refrigerator.

Because manufacturers have aimed to build refrigerators for a lifetime of use, the industry has not realized how many obsolete automatic refrigerators are now in use. In the 15 cities of Buffalo, Washington, Pittsburgh, Akron, Cleveland, Columbus, Cincinnati, Toledo, Indianapolis, Evansville, Birmingham, Fort Worth, Houston, San Diego, and San Francisco, Scripps-Howard found this out about the age of mechanical refrigerators in the homes in these cities.

16.6%	were less than 1 year old
19.2%	were 1 year old
17.0%	were 2 years old
11.9%	were 3 years old
8.9%	were 4 years old
7.0%	were 5 years old
4.8%	were 6 years old
6.1%	were 7 years old
8.5%	were 8 or more years old

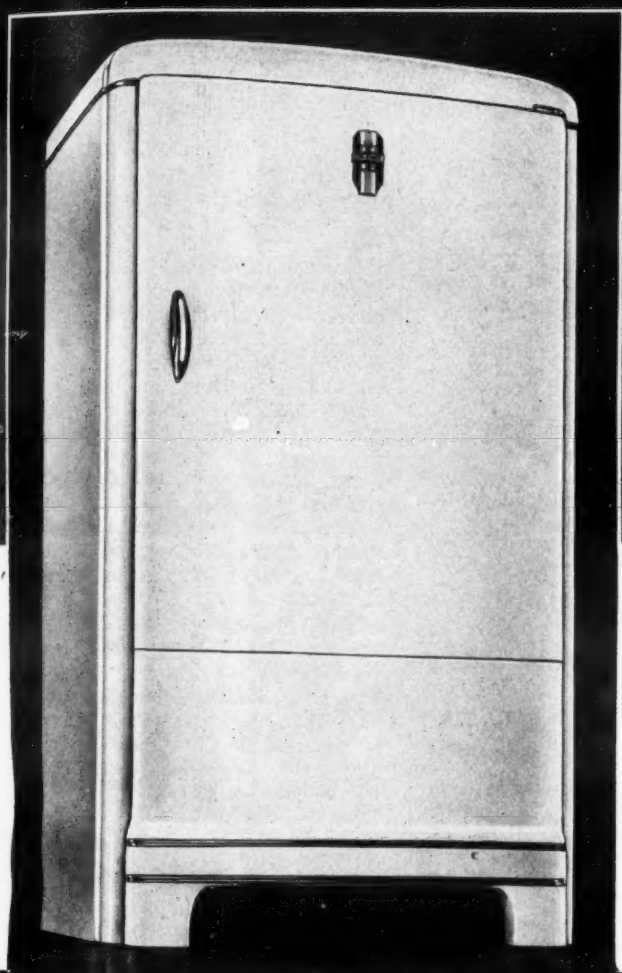
You will notice that 26.4% of these automatic refrigerators were five or more years old and that almost 15%, or 14.6% to be exact, were seven or more years old.

No national figures on the age of existing refrigerators are available. (Continued on Page 6, Column 2)



# Frigidaire and General Motors Present The World's First "Cold-Wall" Refrigerator 1939 FRIGIDAIRE WITH THE METER-MISER

## BUILT ON AN ENTIRELY NEW PRINCIPLE!



Reproduced from certified, unretouched photographs of identical foods, refrigerated, uncovered, at comparable temperatures.

**Sensational New-Type Refrigerator opens up new era in better food-keeping... saves food's vital juices from drying out... preserves food vitality for days longer... now being shown to the public!**

● Years in the making... now years ahead!... Frigidaire and General Motors have scored another triumph of engineering... in presenting for the first time this amazing new "Cold-Wall" Frigidaire.

It's now being shown to the public.

Truly, it's a modern food-keeping miracle. For now it is possible to store even highly perishable foods... prolong their original freshness... retain their rich nutritional values... save their peak fresh flavor... days longer than ever before. And the proof of this great food-keeping improvement is so

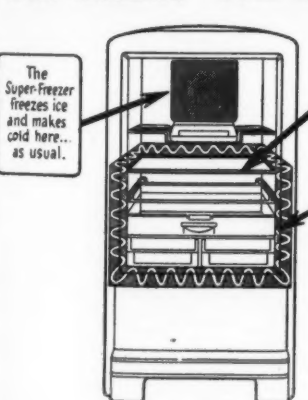
dramatic that millions will marvel at it!

New in simple beauty, new in basic design, new in appointments of greater usefulness... new from top to bottom, this 1939 Frigidaire offers dealers new sales and profit opportunities. Coordinated with this sensational new product are new high-speed selling helps—plus an advertising and sales promotion program as powerful as the appeal of the products themselves. Sweepingly advanced products, streamlined sales promotion and advertising, swift, direct sales strategy... everything in the program... points to greater sales rewards for Frigidaire Dealers in 1939!

**Only Frigidaire Has The Meter-Miser!** Simplest Refrigerating Mechanism Ever Built... and when parts aren't there, they just can't use current or wear. Unseen, trouble-free, completely sealed in a permanent bath of oil. 5-Year Protection Plan backed by General Motors.

**Only Frigidaire Has Quickkub trays!** Imitated but never equalled... Easier to remove—Easier to use—lift one lever and cubes are free, two or a trayful. Built Sturdier. Faster Freezing. Better Looking. Compare—and you'll want to sell only GENUINE FRIGIDAIRE QUICKKUBE TRAYS.

### HOW AMAZING "COLD-WALL" PRINCIPLE WORKS!



#### NOW, FOR THE FIRST TIME

1. THE NEW "DEW-FRESH SEAL"—A SOLID GLASS PARTITION—DIVIDES THE CABINET INTO 2 COMPARTMENTS

and  
2. THE LOWER COMPARTMENT IS REFRIGERATED DIRECTLY THROUGH THE WALLS BY CONCEALED REFRIGERATING COILS.

● This provides all 3 essentials for keeping foods vitally fresh longer than ever before—1. Uniform Low Temperatures. 2. High Humidity. 3. No Moisture-Robbing Air Circulation. All without adding a single moving part! AND ONLY FRIGIDAIRE HAS IT!

### The Frigidaire Electric Range combines all these "Custom-Built" Features... For Low Cost... High Speed... Sure Results

Every Unit a "Speed-Heat" Unit with 3 Cooking Speeds  
Full-Size, Economical "Even-Heat" Oven  
Double-Duty "Thermizer"  
1-Piece All-Porcelain Cabinet  
1-Piece Stainless Porcelain Top  
High-Speed Broiler  
Exclusive "Evenizer" Heat Distributor  
1-Piece All-Porcelain Oven Interior  
Non-Tilt Sliding Shelves  
Counter-Balanced, Shelf-Type Oven Door  
Front Opening Oven Vent  
Hydraulic Oven Heat Control  
Silver Contact Switches  
Armored Wiring  
Utensil Storage Drawers  
Above Features in every Household Model—Following Features either standard or optional equipment—depending on model selected.  
"Thriftomatic" Switch  
"Cook Master" Control  
"Time Signal"  
Warning Drawer  
Cooking Top Lamp  
Condiment Set  
These Beautiful Porcelain Ranges give a wide choice of prices and models.

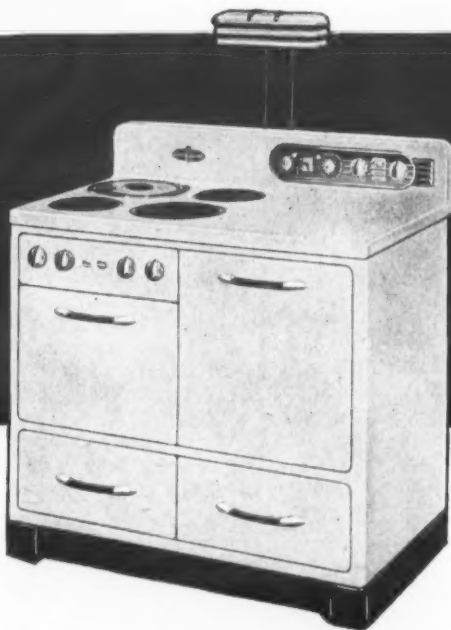
## For 1939 the FRIGIDAIRE Electric Range

Designed by 7550 Women To Combine  
**LOW COST... HIGH SPEED... SURE RESULTS**

● In a single year, this marvelous electric range has become one of America's favorites. Designed by 7,550 women... practical homemakers who had seen and used all kinds of ranges... the Frigidaire Electric Range combines all the advantages of modern electric cooking to give Low Cost... High-Speed... Sure Results.

No wonder there is so much enthusiasm over the Frigidaire Electric Range. It has proved itself in the field... with the dealer, with the salesman, with the consumer. And in 1939, with its new refinements, its additional advancements, with a

bold and aggressive sales program, it will continue to make records. A comprehensive advertising program in national magazines and newspapers will supplement sales activity. Plans are laid for a big year for 1939. It is not too late to get your share of the fastest growing profit line in the industry!



### MORE BIG NEWS FOR 1939

A NEW LOW PRICE For a Brand-New 1939... Full 6 Cubic Foot

GENUINE  
**FRIGIDAIRE**  
WITH THE METER-MISER  
*"Super-Value 6"*



SAME Simplest Refrigerating Mechanism Ever Built!

SAME World-Famous Meter-Miser

SAME One-Piece All-Steel Cabinet Construction

SAME finest features of quality and performance... as other Frigidaire models costing up to \$100 more!

Here is a traffic-builder! A 6 cu. ft. low-price quality refrigerator that will bring more interested prospects to dealers' stores. It rounds out the Frigidaire line of refrigerators to give dealers a complete range of models and prices in every competitive field.

#### Look at this Line-Up of New Frigidaire Models!

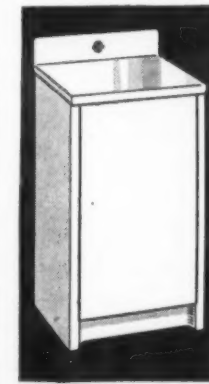
6 Cu. Ft. "Super-Value 6"	Dulux Finish
3 Cu. Ft. Model DA	"
4 Cu. Ft. Model DA	"
5 Cu. Ft. "Special"	"
6 Cu. Ft. "Special"	"
4 Cu. Ft. "Master"	"
5 Cu. Ft. "Master"	"
6 Cu. Ft. "Master"	"
8 Cu. Ft. "Master"	"
6 Cu. Ft. "Cold-Wall"	"
8 Cu. Ft. "Cold-Wall"	"
5 Cu. Ft. "Cold-Wall"	"
6 Cu. Ft. "Cold-Wall"	"
8 Cu. Ft. "Cold-Wall"	Porcelain
12.5 Cu. Ft. Imperial (2-Door)	"
"Cold-Wall"	"

Every one with the exclusive Meter-Miser  
A Size for Every Need and Purpose...  
A Price for Every Budget

### New for 1939

#### Frigidaire "Table-Top" Electric Water Heater

● Newly designed for the vast market that is rebuilding, remodeling and planning new kitchens. It's usable as another working top in the kitchen, in addition to its superb performance as a maker of plenty of steaming hot water. Handsome, gleaming Dulux finish, compactly built to stand at height so that it will fit well into any kitchen design. Economical, efficient, durable. Typical Frigidaire and General Motors dependability and long life... Frigidaire Electric Water Heaters are also available in beautiful upright cabinet models for kitchen or basement installations. Capacities from 30 gals. to 80 gals.





## New Trends In Design & Manufacturing And Old Selling Methods Are Advocated

(Continued from Page 4, Column 5)

However, on Jan. 1, 1938, it was estimated that 11,271,000 electric refrigerators were in service. Subtract these refrigerators from the 12,698,476 refrigerators sold from the beginning of the industry and it is apparent that only 1,427,476 electric refrigerators had been replaced up to the first of 1938.

Since 2,834,676 electric refrigerators had been sold from the beginning of the industry up to the end of 1930, probably 1,405,200 refrigerators seven or more years old were still in use in the year 1938. Stop a minute, and compare today's refrigerators with those produced just seven years ago.

But age alone is not the only reason why millions of household electric refrigerators are susceptible of replacement.

Many of the refrigerators in use are too small. Remember the drives of 1933 to 1936 that sold myriads of small 3½ and 4-cu. ft. boxes.

Many of the electric refrigerators now in use are current wasters. They use two to seven times as much electricity as present day models.

Many of the refrigerators now in use are inconveniently arranged, as the housewife finds to her dismay every time she opens the door.

Many of the refrigerators in use today are inefficient refrigerators. Remember the jalopies and orphans that never should have been made by scores of refrigerator manufacturers now out of business.

Many of the electric refrigerators now in use are unsightly, old-fashioned, ice cube misers—their capacity is too small—or too noisy—they're driving their owners crazy. If these reasons seem insufficient reasons for replacing millions of electric refrigerators now in use, think how many automobiles are traded in with years of service still in them.

### Data on Replacement Sales By Cities In '38

Further light on the importance of the replacement market is disclosed in a study made by Albert P. McNamee of McCall's Magazine. Between April 1 and July 15, 1938, Mr. McNamee personally made over 770 calls on 1938 purchasers of one well known brand of electric refrigerator in 11 representative communities. Mr. McNamee interviewed each family and took a photograph of the house in which each family lived.

Here are some of Mr. McNamee's findings. In Brockton, Mass., he found that 5.8% of the 1938 refrigerator purchases were replacing an automatic refrigerator. In Holyoke, Mass., he found 36.8% of the buyers interviewed were replacing a previously owned automatic refrigerator. In Springfield, Mass., almost 18% of the 1938 purchases were replacing an automatic refrigerator. In Providence, R. I., 26.6% of the 1938 buyers interviewed were replacing an automatic refrigerator.

In White Plains, N. Y., a high class suburb of New York City, 40.7% of the 1938 refrigerator buyers interviewed were replacing a previously owned automatic refrigerator. This figure is rather interesting, since the people in White Plains, N. Y. were probably the first to buy electric refrigerators in the old days and so it is logical that the high percentage of them are now replacing these old boxes.

In Wilmington, Del., 21.25% were replacement sales of automatic refrigerators. In Richmond, Va., the dealer handling this particular make of refrigerator had sold so few refrigerators that although 49% of the families interviewed had replaced an automatic refrigerator with a new

1938 model, it is felt that the sample is too small to be significant. In Charlotte, N. C., 14.6% of the 1938 refrigerator buying families were replacing an older automatic refrigerator. In Greensboro, N. C., the dealer had sold so few refrigerators of this particular make, that the results were not felt to be too conclusive. In Toledo, 29.5% of the 1938 refrigerator buyers had replaced a previously owned automatic refrigerator. In Indianapolis, 25.3% were replacement sales.

Combining all these communities surveyed by McCall's Magazine, it was found that 28.3% of the sales were made to families already owning automatic refrigerators. McCall's Magazine offers its survey purely as an indicative one. Whether the replacement business of the nation in today's household electric refrigerator sales is 15 or 28 or 20% is less important than the fact that the replacement business has grown and each year will become more important to the industry. And the replacement business must be stimulated in an industry that is geared up to produce and sell 2,000,000 boxes a year, if that industry is to survive on a profitable basis to stockholders, distributors, and dealers.

Significantly, Mr. McNamee said in his report to McCall's: "As nearly as we were able to ascertain, not one single replacement of an automatic refrigerator among the families we interviewed was sold. The customers took the initiative and either telephoned or dropped in on the dealer and bought the replacement refrigerator."

Other findings of the 1938 refrigeration survey by McCall's Magazine shed some light on 1939 refrigerator sales planning. It was found that 68% of the 1938 refrigeration buyers interviewed in these 11 communities had incomes of over \$2,000 a year and only 32% of the buyers had incomes of less than \$2,000.

Apropos of this condition, Mr. McNamee said: "This survey indicates that families in the middle and high income groups constitute the major market for this brand of refrigerator. This seemingly may be explained by the fact that these families have larger amounts of money available for expenditures after the vital necessities of life have been provided than have the low income wage earners." On the subject of home owners vs. home renters, as refrigeration prospects, the McCall survey disclosed the fact that 54.1% of the 1938 refrigerator buyers interviewed in these 11 communities own their own homes.

On the other hand it was found that home owners are more apt to replace an automatic refrigerator. Of the families who were buying their first automatic refrigerator, only 48% were home owners, but of the families who had made a replacement purchase of a second automatic refrigerator, 73.4% were home owners.

### 'Radical' Changes In Design Called a Need

In the light of this resume of past refrigeration history and recent surveys, let's examine the next step for the refrigeration industry in terms of (1) design and developments (2) manufacturing (3) pricing (4) selling and (5) advertising and promotion.

Certainly the history of other industries proves that they did not stimulate replacement sales until they went to radical design changes. This is true of the passenger car industry with its safety glass, its off-the-floor gear shift, its streamlining, etc. It is true of the wash-

ing machine industry, the vacuum cleaner industry, the clock industry with its change from spring wound to electric movements. It is true of the furniture industry.

It is particularly true of the radio set industry which can point to an excellent history of stimulated replacement sales. We all had battery sets, and the introduction of electric radio sets forced us to replace. We had magnetic speakers until the radio set manufacturers brought out sets with dynamic speakers, and we were forced to replace again. The radio set manufacturers went from glass to metal tubes. They went from manual to electric tuning and now to remote control. The history of other industries like the portable lamp, the wallpaper, and the clothing industries proves that stimulated replacement sales come from radical design change.

So much for design. Now for manufacturing. Rolls Royce and Mercedes Benz will give you any style car you want. Buick, Ford, and Nash—quantity production companies—offer relatively few models. In the face of lower prices and profit, refrigerator manufacturers would do well to offer a smaller number of models to the trade and Mrs. Consumer.

Not only will the distributor and dealer be pleased, but the money saved on tools and dies can be invested in selling, promotion, and advertising where it is sorely needed. So much for design and so much for manufacturing.

Our third point is Pricing. Left to itself, the cost of refrigerator prices would be inevitably downward. Eventually there would be no money left to build continuing volume sales. If the industry will build into boxes new features and better value, then the consumer will be content to pay present-day refrigerator prices.

Studies which Norge has conducted for five years show that "price" is less of a factor in influencing refrigerator purchases today than it was four years ago.

Remember too that the \$89 electric refrigerators did not click with Mrs. Consumer at a time when average prices of refrigerators were much higher than they are today.

### 'Start Selling the Lists of Users'

We have divided the subject of selling into two parts; first, selling to the trade. Last year was a poor one for the refrigerator trade. Sales were off. Price-cutting was prevalent in many localities. Profits were off.

No industry is in a good position when its distributors and dealers are not happy because of insufficient profits. Therefore, some plan must be found to re-enthuse the distributor and dealer and bring back volume sales at a profit. The dealer's mind and that of his salesmen must be taken off the declining market for first-time sales of automatic refrigerators. We believe that a national, organized drive on refrigerator replacement sales is the answer.

It will not be hard to sell because some refrigerator dealers are already aware of the replacement sales opportunity. And in Washington, D. C. they're forced to sell replacement refrigerators to an 85% saturated market.

Here is a moral from Detroit. Where would the automotive industry be today if it depended for sales only on the few million families which have never owned an automobile? To whom are the automotive people selling most of the new cars? They are selling to those who already own an auto—to those already sold on the value of autos—to those whose past auto purchases indicate they had money to buy. The automotive industry's prospect list is its list of existing auto owners.

In the refrigeration industry there is a priceless prospect list. Few industries have decent prospect lists. Insurance salesmen beg for lists of prospects. Real estate salesmen would give their mother-in-law's arm for names of home seekers—prospects.

And yet a priceless prospect list is waiting for the refrigeration industry—the 11 to 12 million families that now own an automatic refrigerator.

By the same specialty methods which first sold these 11 or 12 million families, the industry can go back and sell a high percentage of them a replacement refrigerator. That's when profits will come back to salesmen, dealers, distributors, and manu-

facturers. The trade-in problem—selling replacement refrigerators will result in trade-ins just as in the automotive and radio industries. Trade-ins are a problem, but they will be less of a problem if the refrigeration industry today will collectively band together and determine to control trade-ins rather than be controlled by them.

No one we know of can give a quick and brief solution to the trade-in problem. However, all manufacturers and many distributors and dealers are studying the trade-in problem, and the history of the automotive and radio industries can teach us some lessons. For example:

### Trade-In Allowances Must Be Kept In Hand

Trade-in allowances must be kept low or the families who have been educated by weak-kneed auto and radio dealers will be selling their old refrigerators back to your dealers at too high a price. The industry might consider an industry refrigerator trade-in allowance Blue Book like the book used in the automobile industry.

Be realists in setting allowances. Make allowances so low for outworn boxes that they can be junked as they should be. Keep allowances on good old boxes low enough to permit their resale to low-income families. Low-income families, we predict, will be found to be the market for used refrigerators just as they are now the market for used automobiles and old houses.

The industry must work out plans that will relieve the individual dealer of the headache of trying to move masses of traded in refrigerators. The refrigerator dealer's job is to sell new boxes and not old refrigerators.

Refrigeration must be kept away from the condition the automotive industry faced early in 1938 from unwisely accepted trade-ins. Trade-ins must be controlled so that they cannot become a dangerous price-cutting weapon.

### 'No Substitute For Specialty Selling'

So much for design and development, manufacturing, pricing, and selling to the trade. Now let us consider selling to Mrs. Consumer.

Why did 1938 retail sales of electric refrigerators slump more than those of any other year? The recession was not to blame. In the depression, sales declined in only one year—1932—and then only 11.9%—not the 30 to 45% decline of this last year. Two reasons are indicated for the 1938 slump in refrigerator sales. One, lack of enough selling to Mrs. Consumer and two, failure to utilize to the fullest, the proven, tested appeals that once successfully sold millions of refrigerators.

What do we mean by lack of enough selling to Mrs. Consumer as a reason for the 1938 refrigerator slump? Mr. McNamee of McCall's Magazine found in his study that the women who in 1938 replaced their automatic refrigerators had not been asked to buy. They had not been sold—they bought. We all know personally of many cases where right prospects for replacements have never been asked to buy.

Today there is increased competition for Mrs. Consumer's dollars because of all the old and the new products clamoring for her interest. Now, then, can we expect the woman who already has some sort of automatic refrigerator to replace it or the woman with no automatic refrigerator to buy one unless the industry makes an effort to sell her? More selling—and specialty selling—is needed and there is no substitute for it.

On the need for specialty selling remember the parable of the vacuum cleaner. The vacuum cleaner people sold millions of cleaners to satisfied customers. The women loved the cleaners they had bought. Then the vacuum cleaner boys sat back and fondly imagined that when vacuum cleaners wore out, millions of women, knowing the worth of vacuum cleaners would rush to stores for replacements. Only they didn't.

Instead, some naive Swedes brought over a funny-looking vacuum cleaner selling for \$70 to \$80 and they had the quaint notion that they could sell this cleaner as a replacement by specialty selling methods. And whether we like it or not, they did.

### Housewife Must Want a Refrigerator

The second reason for the slump in 1938 refrigerator sales is, we believe, the fact that the right appeals were not used in sales and in advertising. We raise the question of whether the right appeals are being used today to sell refrigerators both to existing owners and to women who have still to buy their first automatic refrigerator. Are the right appeals being used in the right quantities? Since sales appeals and advertising appeals are almost identical, they may be considered together. What appeals sold almost 13,000,000 electric refrigerators to Mrs. Consumer?

We cannot account for all of the refrigerators but we know that these six appeals sold about 10,000,000 refrigerators to Mrs. Consumer.

The first appeal used was that of cleanliness—release from the sloppiness of ice and the iceman was the slogan of the mechanical refrigeration industry.

The second appeal used by the refrigeration industry was pride of ownership. Those were the days when refrigerator advertisements showed men and women in evening dress saying, "Come out into the kitchen and see our new refrigerator."

The third appeal used by your electric refrigeration industry we have called the creative urge. I can best explain this by saying that the lot of the housewife in her daily work is a routine and rather humdrum one. Therefore, you told her about the frozen desserts, the new dishes, and the new recipes she could make in an electric refrigerator if she bought one.

The fourth appeal which you used was one of health and safety. You told the story of the 50° zone and bacteria.

The fifth appeal you used in sales and in advertising was that of economy—economy both in food bills and in electricity bills. In effect, you said "Do your shopping once a week—take advantage of week-end bargains—by buying this new, large electric refrigerator." And some of you said "This electric refrigerator will use less current than a lamp bulb."

The sixth appeal which you used in selling refrigerators was the appeal of convenience. You talked about gadgets, about the sliding shelves, and the better arrangement of electric refrigerators.

Millions of dollars were spent in advertising and promotion to push each one of these six appeals. But many millions more came back from the investment in sales. These six appeals sold electric refrigerators.

### Survey Shows Old Appeals Have Power

Have these six appeals lost their power? Carroll & Pelz recently made an investigation for McCall's Magazine among women. This investigation ranks the appeals that sell electric refrigerators as follows: (1) Convenience; (2) Economy; (3) Reputation of Maker; (4) Noiseless Operation; (5) Health and Safety; (6) Mechanical Perfection; (7) Pride of Ownership; (8) Cleanliness; and (9) The Creative Urge.

You will notice that three of these appeals—Reputation of Maker, Noiseless Operation, and Mechanical Perfection are new. They are the appeals that come into any industry after it has been operating for some time. But the other six appeals which are still potent are the same six old appeals. And you will notice that Convenience and Economy—appeals to a woman's use of refrigerators—are still the most potent.

This survey just mentioned was made among women—why the emphasis on women? How many times have you heard a man say, "Darling, we simply must have a new refrigerator?" It isn't done but women are saying just that to their husbands every day.

No refrigerator is ever sold until a woman first says to herself, "I want a new refrigerator." Since women are important, what are the appeals that sell women? They are those appeals which both in copy and illustration arouse desire for modern electric refrigeration and show the benefits of use of electric refrigeration to women in the proper setting.

Various members of the industry may say: "We've got to sell our own particular refrigerator and so we

(Concluded on Page 7, Column 1)

## Outsell all others with Copeland

### Commercial Refrigeration

The efficiency, economy and dependability of all Copeland Commercial Units make prospects easy to find, make sales easy to close. Our twenty years of leadership in commercial refrigeration are evident in every unit.

HIGHEST  
EFFICIENCY!

LOWEST  
OPERATING COST!

LONGEST TROUBLE-  
FREE SERVICE!



COPELAND REFRIGERATION CORPORATION, Sidney, Ohio  
INVESTIGATE COPELAND'S COMPLETE LINE OF HOUSEHOLD REFRIGERATORS AND WATER COOLERS



## Return To Bureau Idea Seen as Advantageous To '39 Sales Effort

(Concluded from Page 6, Column 5)  
must advertise our own special features." True, but the job of selling a particular brand of refrigerator is done most effectively in the language and in a setting that creates desire for modern refrigeration, and unless time and space is taken to constantly arouse desire for a new automatic refrigerator, is it any wonder that women will cast their votes for new coats, new cars, new ranges, or new furniture for the living room? If the job of arousing desire for electric refrigeration can't be done by individual manufacturers, distributors, and dealers, it must be done collectively by the industry.

So much for design and development, manufacturing, prices, and selling. Now for advertising and promotion.

Any examination of the records of national magazine advertising will show that the decrease in investment in refrigerator advertising in national magazines almost parallels the decrease in sales in refrigerators for 1938 compared with 1937.

Can the refrigerator industry expect people to buy their first automatic refrigerator or expect women to replace old automatic refrigerators with new models if the industry spends less money in promotion and advertising?

Increased advertising by individual manufacturers, distributors, and dealers cannot fail to build back a volume business in refrigerators. And an industry campaign to make women buy new refrigerators rather than the other products offered them cannot fail to help build further.

Should not the electric refrigeration industry, through the Modern Kitchen Bureau, or some other agency, resume the kind of industry advertising and sales promotion done by the old Electric Refrigeration Bureau? Remember the success of the bureau in selling an idea. Apparently, this idea must still be sold—the idea that a new electric refrigerator is more desirable to a woman than any other major product or service offered to her. If the refrigerator industry is to recoup its lost position, certainly now is the time to start, because all business history says, "When recessions end, it's those industries which have been advertising throughout the recession that first feel the effect of Mrs. Consumer's augmented purchasing power."

The automatic refrigerator profit opportunity today is two-fold. First, there is the old opportunity to keep selling the women with money to buy who have yet to purchase their first automatic refrigerator. The second part of the refrigerator industry's profit opportunity today is to resell those women who were the industry's first and most encouraging customers. These are the women with money, the women with children, the women with food to preserve and prepare, the women who now use an automatic refrigerator, but must be resold or persuaded to replace.

To realize this opportunity it is suggested to the refrigerator industry that it follow five major recommendations.

First, under design and development—appreciable, visual, apparent, if not radical, design change and improvement.

Second, under manufacturing—fewer models.

Third, under pricing—build greater value into your products so that Mrs. Consumer will not mind spending the same amount of money.

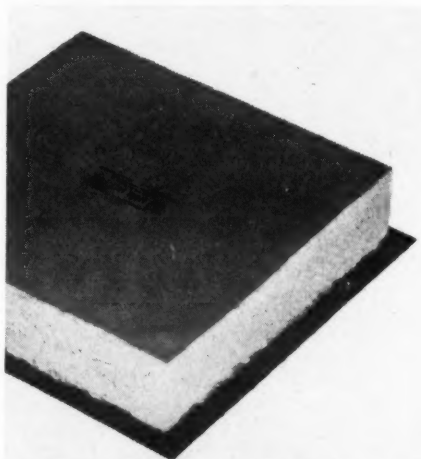
Fourth, under selling—a national organized drive to sell replacements.

Fifth, and finally, under advertising and promotion—a return to the proven sales and advertising appeals that aroused women's desire for refrigeration—not less advertising and promotion, but more of it in those tested media—national magazines—which have demonstrated their ability to reach women with money and to arouse their desire for electric refrigeration—and finally a resumption of Electric Refrigeration Bureau promotion and advertising.

It is our belief that if this program is followed, the 1939 electric refrigeration sales curve will not go further down from 1938, but instead will go up.

# Use this insulation for 3 new benefits

- 1-Lowers costs
- 2-Cuts on the job
- 3-Saves assembly time



**Sealing Flange:** Prefabricated pieces of Bound-Batt insulation can be furnished with a patented asphalt sealing flange to provide an economical moisture barrier. This saves time in assembly.



**Cut with Knife:** Fabrication on specially built jobs or low production schedules is facilitated by keeping standard rolls in stock and then cutting to proper sizes with an ordinary slicing knife.



**Cut with Saw:** Volume production schedules are met economically by cutting with a knife blade band saw. This equipment is low in cost and easy to install and operate.

• Dry-Zero Bound-Batt, the new highly efficient insulation, has already been adopted for nationally known household refrigerators.

It is manufactured by a new patented process developed by Dry-Zero Corporation. This exclusive process eliminates several costly manufacturing steps, which means: 1) *insulation of the same high quality as all other Dry-Zero products*, 2) *at lower cost*.

This lower cost makes the highly efficient Dry-Zero insulation available for every type of refrigerating container.

Bound-Batt has another advantage. It is available in rolls which can be kept in stock until needed; and then cut to any size or shape easily and economically, right in your own plant.

This means that small volume users can adapt Bound-Batt to their own production schedules. It is not necessary to plan fabrication specifications and place quantity orders for fabricated pieces months in advance.

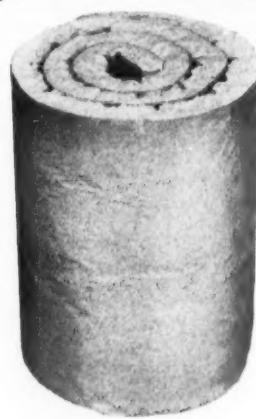
Bound-Batt is sturdy and stiff enough for high speed production line schedules.

Furthermore, it is so flexible that it is suitable for any type of construction. It fits snugly into any shape or corner or irregular contour.

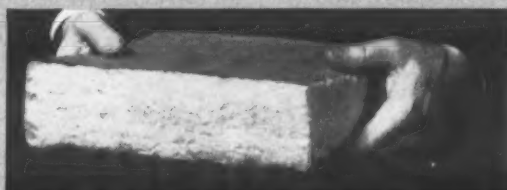
Along with these new advantages of Bound-Batt, the refrigerator manufacturer is sure of the same high insulation efficiency and long life which have made Dry-Zero insulation famous for all types of severe insulation problems, from solid CO<sub>2</sub> containers to airplane cabins.

Remember, Dry-Zero's remarkable insulation efficiency rating of 0.24 Btu. has been measured by several independent authorities, such as the U. S. Bureau of Standards.

Bound-Batt is available in standard rolls 25 feet long, in widths from 12 to 36 inches, and thicknesses of 1, 1½, 2, 2½, 3, and 4 inches. Bound-Batt is also pre-fabricated to special dimensions. Manufacturers are invited to write for quotations on this new Dry-Zero product.



## Get the Facts about This Money-Saving Insulation



Free engineering service is available in applying the new Bound-Batt to insulation problems. Manufacturers are invited to submit their problems without obligation. Address: Engineering Department, Dry-Zero Corporation.

The most efficient  
commercial insulant known

**DRY-ZERO**  
Bound-Batt  
Insulation

Dry-Zero Corporation  
Chicago—222 North Bank Drive  
New York—60 East 42nd Street



## Norge Has 2-Refrigerant System In One Series of Models, Hermetic Unit In Another

(Concluded from Page 1, Column 5)  
a new nameplate of shield design has been added.

Interiors are finished in porcelain enamel with acid-resisting porcelain base. Former flexibility of interior arrangement has been retained, with shelf inserts permitting storage of watermelons, large roasts, and other bulky foods without disturbing other cabinet contents. Sliding bottle shelf with half-way stop permits removal of any desired bottle without disturbing the others.

Immediately below the freezer is a new "Coldpack" for storage of raw poultry, meats, etc., and the shelf section beneath it can be dropped for greater convenience. Designed as a miniature cold storage vault, the

froster through an opening at the rear.

Water line in the receptacle can be seen at a glance by the housewife, and the device is said to add 2 inches of usable space in the middle of the food compartment, and makes it unnecessary to take out the cold storage tray while defrosting.

Another new convenience feature is a glass-covered vegetable container of porcelain, suspended from the lower shelf. Inset in this shelf is a glass section, which serves as a cover for the container and enables the housewife to see just what vegetables she has in stock. Alongside the vegetable container is a fruit container, also of porcelain.

The 8-cu. ft. model also is equipped with an egg basket suspended from the shelf, for the storage of eggs, butter, and other dairy products. These containers can be withdrawn part way as desired.

Ice cube trays have an "instant release" feature for quick and easy cube removal. A touch of the back of the tray against this device, and a twist, frees the ice. Aluminum trays with rubber grids are used in most models, and all-aluminum trays in the others.

Ice compartment is completely sealed—front, bottom, sides, and back—to prevent food odors from reaching the freezer. A heavy door seal makes the door air-tight.

The "C/M Synchronizer" has three different control settings—for hot, cool, and normal kitchen temperatures—which is said to insure the proper degree of temperature and humidity at all times, and simplifies the control process that formerly had nine positions.

Shelves are supported on black Bakelite holders. Cabinet interior has rounded corners for easy cleaning.

Models in the "Marathon" line have many of the features of the C/M Synchronizer series. Exteriors are finished in "Norgloss" synthetic enamel, interiors are of porcelain enamel. Standard equipment com-

### For the Defrost

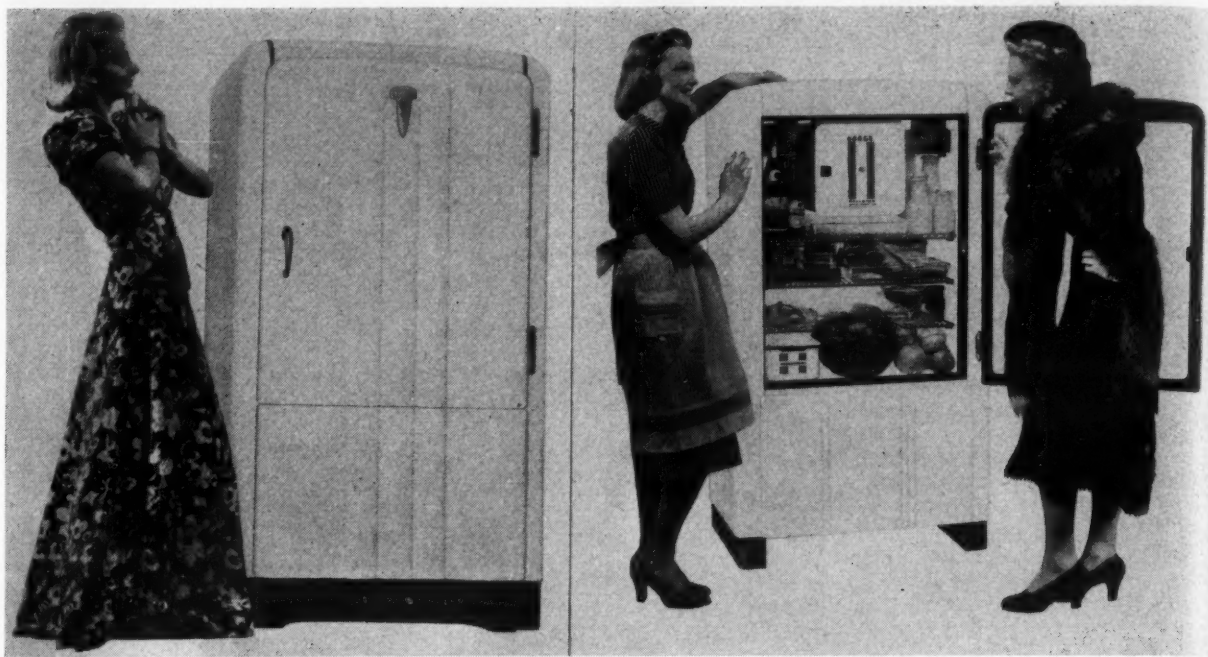


Newest of Norge conveniences is the "Handefroster," a spill-proof container which supplants the usual defrosting tray.

Coldpack is a porcelain pan of sufficient capacity to handle large roasts and other bulky foods. It need not be disturbed when defrosting.

Supplanting the regular defrosting tray is a new "Handefroster," a frosted glass receptacle placed out of the way at the rear of the shelf below the freezer. A porcelain pan, placed above the Coldpack, catches the drip from the froster during defrosting, and carries it to the Hande-

## '39 Norge Has Ultra-Modern Styling, New Conveniences



Left: Enhancing the beauty of Norge's new models is the use of vertical line down the cabinet front, and addition of a shield-type nameplate. Right: Interior flexibility has been maintained, with arrangements possible to suit storage needs of many types of bulky foods.

prises instant release ice tray bar, electric light, vegetable drawer under glass top, sliding fruit basket, Coldpack drawer, Handefroster, insert shelf, and sliding shelf.

In addition, the 8-cu. ft. model is equipped with a sliding dairy basket. Both C/M Synchronizer and Marathon models are sold with a 10-year warranty on the Rollator compressor. Regular-type unit is used to power the Marathon models.

Norge's first sealed compressor unit is introduced in the "Gold Seal" series. Called the "Mighty Midget," the unit is operated by a motor of 1/2 hp. Norge engineers say this mechanism, built on the Rollator principle, is the only refrigerant-cooled, hermetically sealed domestic refrigeration mechanism in the world. The compressor unit in these models is covered by a five-year protection plan.

Designed to catch the moderate price market, the Gold Seal line is attractively styled with new front panels, and is finished in white Norgloss with black open base, with new hardware and nameplate. Four models are in the series.

Interiors are equipped with a new flexible shelf insert, a "hydrovoir" for the storage of leafy foods and other vegetables (except in the 3-cu. ft. model), a glass defrosting tray, and instant release ice trays.

The "Thirty-Niner" comes only in the 6-cu. ft. model, and is the company's offering to low-income families who want an attractive and serviceable refrigerator at low cost. Finished in white Norgloss with black

open base, it has an interior of porcelain enamel, and includes defrosting tray and ice cube release as standard equipment.

It also is powered by the Mighty Midget 1/2-hp. hermetic unit, with the motor refrigerant-cooled. It has an ice-making capacity of 6 lbs. and is equipped with three shelves.

### Washer-Ironer Research Program Planned

CHICAGO—Plans for the extension of cooperative research and promotion upon the part of washer and ironer manufacturers were laid here recently when more than 125 industry executives gathered at the annual meeting of the American Washer & Ironer Manufacturers' Association.

Announcement that the total number of household washing machines in use in this country passed the 13,500,000 mark last month was made by W. Neal Gallagher, head of Automatic Washer Co., Newton, Iowa, as he began his second term as president of the association.

In deference to the memory of William H. Voss, late president of Voss Bros. Mfg. Co., Davenport, Iowa, and treasurer of the association since its founding in 1916, no new treasurer was named. Instead, the duties of this office were taken over by Joseph R. Bohnen of Chicago, the association's executive secretary.

### Detroit ASRE Meeting To Be At Lee Plaza

DETROIT—The Lee Plaza hotel, W. Grand Blvd. at Lawton, has been chosen as the site of the February meeting of the Detroit section of American Society of Refrigerating Engineers.

Scheduled for Tuesday, Feb. 21, the meeting will be devoted to air conditioning, and will feature talks by Lowell L. Powers of Carrier Corp., Cincinnati, on "Commercial Air Conditioning," and by J. J. Floreth, manager of the air-conditioning division of York Ice Machinery Corp., Chicago, on "Industrial Air Conditioning."

### Glass 'Igloo' To House Ice Exhibit At Pacific Fair

SAN FRANCISCO—Enthroned in the center of a huge glass "Igloo," a giant refrigerator 25 feet in height will be used by the California Association of Ice Industries to instruct visitors at the Golden Gate International Exposition in the more important features of refrigeration.

Central refrigerator in this display, which is under construction in the fair's Palace of Foods and Beverages, will be flanked by four natural-size models.

Free puzzles will be given visitors to the "igloo," and a talking ice water fountain will provide "drinks on the house."

## Standardize on SPORLAN Controlled Performance VALVES



and get "Peak Performance" on ALL installations



Sporlan CONTROLLED PERFORMANCE valves are the only thermostatic expansion valves with elements charged according to the application of the valve. The selective charges are designed to give the best operating characteristics for each class of installation. Only by using SPORLAN valves can you be assured of PEAK performance on EVERY installation.

YOU CAN INSTALL Sporlan Valves WITH CONFIDENCE



**SPOEHRER-LANGE COMPANY**  
3723 COMMONWEALTH AVE. ST. LOUIS, MO.

## BEERADOR BOOMS BEER SALES

Unique Display! Merry-go-round shelves cut handling in half!

A spectacular refrigerator that displays beer. Put warm beer in at the front. Give shelf a quarter turn. Take out cold beer at front. Holds 21 cases. Diameter of only 37 inches. Save floor space.

The Beerador was the sensation of the N. H. F. A. and A.C.F. Exhibits at Chicago. Write or wire for exclusive franchise.

THE JEWETT REFRIGERATOR CO. INC.

Established 1849 BUFFALO, N. Y.



**PAR CONDENSING UNITS**  
28 MODELS  
1-4 TO 20 H. P.  
WRITE FOR FREE CATALOG  
MODERN EQUIPMENT CORP.  
DEFIANCE, OHIO, U. S. A.

**SAVE 20-40%**  
Write for details of  
Alco's new Small  
Capacity "TK"  
Thermo Valve  
Alco Valve Co. - St. Louis, Mo.

**THAWZONE A**  
The New Liquid Dehydrator and Neutralizer. Moisture trouble cured by simple addition of liquid. Safe, harmless, economical.  
HIGSIDE CHEMICALS COMPANY  
Newark, New Jersey

**for BETTER SERVICE**  
EXTRA DRY ESOTOO  
V-METH-L  
METHYLENE CHLORIDE  
VIRGINIA SMELTING CO.  
WEST NORFOLK, VA.



## Distributor-Dealer Doings

### New Orleans Association Announces New Officers

NEW ORLEANS—Rudolph Viener, Jr. was elected to succeed Fred W. Stevens as president of the Electrical Association of New Orleans when that organization held its annual meeting recently.

Other new officers are: H. E. Meade, executive vice president; George J. Segel, secretary; I. W. Tufts, treasurer; and W. E. Clement, director of publicity. Named as divisional vice presidents were: F. B. Stern, wholesaler and utility division; C. O. Brown, refrigeration division; L. C. Reed, air-conditioning and ventilating division; and J. Otto Kaelin, electrical contractor division.

### Baltimore Firm Takes on New Lines, Adds Men

BALTIMORE—David Kaufmann's Sons, distributor for the "Gale" line of portable air conditioners, and Duo-Therm oil and hot water heaters, has assumed distribution of the Stewart-Warner radio line in Maryland, District of Columbia, northern Virginia, and southern Delaware.

Oscar Levitt, formerly manager of the refrigeration and radio division of People's Electrical Supply Co. and more recently a member of the sales staff of the Baltimore branch of Simon Distributing Corp., Hotpoint distributor, has joined the Kaufmann sales staff and will contact the trade in Baltimore and throughout the state.

E. C. Larson will represent the Kaufmann organization in the District of Columbia and northern Virginia.

The distributorship is headed by David Kaufmann and Edgar L. Kaufmann, sons of the firm's founder.

### A. E. Marquet Forms Own Dealership

COVINGTON, La.—Alcee E. Marquet, for nine years credit manager of General Electric Supply Corp. in New Orleans, has been appointed General Electric dealer in southeast Louisiana, with headquarters here.

W. W. Strickland has been named to take Mr. Marquet's place with G-E Supply Corp.

### Mobile Concern To Sell Kelvinators

MOBILE, Ala.—Refrigeration Service Co. of Mobile has been appointed dealer for the Kelvinator line of electric refrigerators, ranges, water heaters, and laundry equipment.

### Ashville Dealer Adds To Force

ASHEVILLE, N. C.—B. W. Brookshire and Robert Freeman recently joined the sales force of the Morris-Austin Co., Hotpoint dealer here. Mr. Brookshire formerly was employed by Reliance Life Insurance Co. and Mr. Freeman by Harry's Motor Inn.

### Marling Claims Biggest Shipment To Kansas

TOPEKA, Kan.—Getting set for a record sales year, Ed Marling's Electric Shop recently received almost two solid carloads of 1939 Westinghouse electric refrigerators and ranges. The shipment is claimed to be the largest single order ever shipped to a Kansas retailer.

### Bowers To Represent Revere In Missouri

KANSAS CITY, Mo.—Keith C. Bowers has been appointed sales representative for Revere Copper & Brass, Inc. in western Missouri and Kansas, with headquarters here.

### Refrigerators Third In Florida '38 Sales

MIAMI, Fla.—Sales of 108,053 units of electrical equipment were made by cooperating dealers in the territory of Florida Power & Light Co. during 1938, figures just completed show.

Refrigerator sales during the year totaled 11,215 units, to stand third in the list behind table lamps, which totaled 28,097 units through the aid of a special campaign, and radios, which amounted to 13,233 units.

Dishwashers were lowest in the sales list, with but 23 units being reported. Small table appliance sales boomed during the year, due in large degree to the current trend to outdoor dining, which permits many of these units to be used away from the kitchen.

### Nelson Handles Philco Refrigerator Line

BALTIMORE—Nelson & Co., distributor in metropolitan Baltimore, western Maryland, and four counties in West Virginia for Universal washers, Ironrite ironers, and Detrola radios, has been appointed distributor in this same territory for the Philco line of refrigerators and air conditioners.

Leonard W. Passano and Donald Vanneman will work on the Philco lines in the metropolitan area, while J. Hershey will cover the outstate territory. Arthur L. Nelson is head of the distributorship.

### Little Rock Dealership Orders Full Carload

LITTLE ROCK, Ark.—Encouraged by a first-year record which saw quotas exceeded in every department, Electric Appliance & Refrigeration Co., opened here in February, 1938, has inaugurated a program of expansion for 1939 by ordering its first full carload of electric refrigerators.

The company sells Westinghouse refrigerators, laundry equipment, ranges, and general appliances, heating and air-conditioning equipment, and radios, and handles all servicing.

Plans for this year call for increased quotas in all departments, says H. Roddy Jones, president of the dealership.

Other officers of the company are: Robert M. Traylor, vice president, and John C. Covey, manager. On the sales staff are W. B. "Bill" Evans, G. O. Duffey, and D. R. Matthews.

### Flint Co. Celebrates 25th Anniversary

SALT LAKE CITY—Celebrating the twenty-fifth anniversary of Kelvinator's business life, more than 250 dealers and salesmen from Utah, Wyoming, and Nevada met here as guests of Leland B. Flint, president and general manager of the Flint Distributing Co., Kelvinator distributor.

Mr. Flint was assisted by three company representatives—H. C. Mealey of San Francisco, western regional manager; A. L. Neely of San Francisco, district service manager; and Paul L. Lewis, Jr. of Detroit, district manager.

Mr. Mealey reported an encouraging business outlook, and predicted that refrigerator sales would probably increase at least 20 to 25% during 1939.

### Polk Meets Northwest Kelvinator Dealers

SEATTLE—Introduction of the new Kelvinator appliances was featured at a four-day conference of Pacific Northwest Kelvinator dealers held here.

Graham Polk, new district manager with supervision over Kelvinator sales in Washington, Idaho, Oregon, Montana, and Alaska, was introduced to dealers at the first meeting.

### Howard Crook Boomed For Baltimore Mayor

BALTIMORE—Boomed by local business men for the office of mayor of the city of Baltimore, Howard E. Crook, head of H. E. Crook Co., Inc., air-conditioning contractor and distributor of Airtemp oil heating and air-conditioning equipment, will run in the mayoral campaign this spring.

### Mouldous Named Mgr. Of Interstate Appliances

NEW ORLEANS—Dan Mouldous has been appointed manager of the major appliance division of Interstate Electric Co., Crosley distributor in southern Louisiana, Mississippi, and southern Alabama.

Mr. Mouldous has spent some 20 years in the refrigeration industry, and has been with the Interstate organization for the past three years.

### Veteran South Bend Dealer Is Dead

SOUTH BEND, Ind.—Death has ended Donald MacGregor's 37 years in the electrical business.

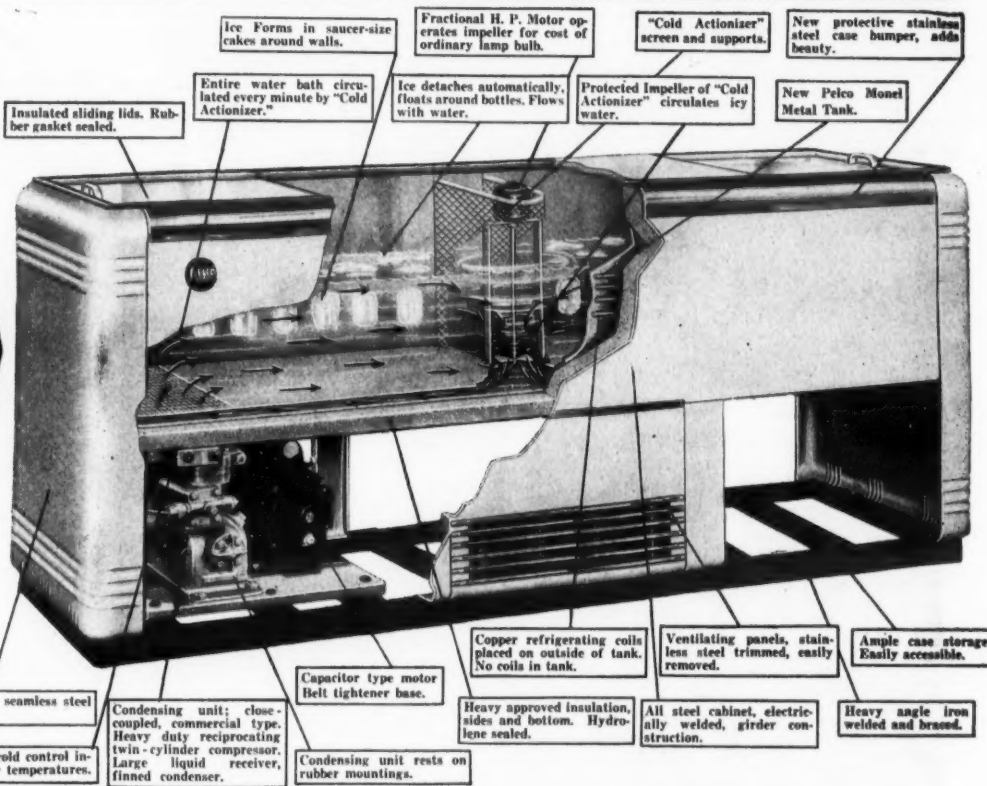
Proprietor of MacGregor Electrical Service Co. since he and F. A. Bryan founded the firm in 1902, Mr. MacGregor passed away recently at the age of 64 as a result of an illness contracted last June while visiting relatives in Scotland, the country in which he was born.

### Crosley To Have Own Studio at N. Y. Fair



Grover Whalen, major-domo of the New York World's Fair, and Powell Crosley, Jr., president of Crosley Corp., stand on the site of an exhibit hall and broadcasting studio which Crosley will erect on the fair grounds. The studio will be used by station WLW for direct broadcasts of World's Fair activities. Facsimile radio will also be demonstrated.

**CHILLS  
BEVERAGES  
Twice  
as  
Fast!**



**Pelco THE FAST  
BEVERAGE COOLER  
WITH FLOATING ICE  
Announces  
A Sensational  
New Feature—*"Actionized Cold"***

**FLOATING ICE IN A WATER BATH  
CIRCULATED by the EXCLUSIVE NEW PELCO  
"Cold-Actionizer"**

NOW comes the last word in Beverage Cooling! The sensational new Pelco cools bottled beverages to a palatable temperature in less than half the time of old-style coolers . . . at a far less cost for current . . . all because of two important features . . . the famous Pelco "Floating Ice" principle and the exclusive new Pelco development, "Actionized Cold." You are cordially invited to mail coupon for our new illustrated brochure just off the press.

PORTABLE ELEVATOR MFG. CO.  
BLOOMINGTON, ILLINOIS, DESK  
Please send me complete information on the Pelco line.

Firm Name \_\_\_\_\_  
Address \_\_\_\_\_  
Individual \_\_\_\_\_

**Refrigeration Division  
PORTABLE ELEVATOR  
MFG. CO. — BLOOMINGTON, ILL.**



Pelco Beverage and Food Cooler Model 312



Pelco Beverage and Food Cooler Model 312



Pelco Beverage Cooler Model 380



## PERSONALITIES

By George F. Taubeneck

### Greatest American

Recent attacks, both open and subversive, upon the American constitution and the American way of living, have sent the writer back to the reading of early American history and biography, studies of the Constitutional convention and the Federalist papers.

What were the philosophical implications behind the Constitution—that greatest of all political documents yet devised by the hand of man?

These studies were prompted not only by the arguments of the collectivists, the planned economy boys who would throw us back to the days of dictatorial central governments, but the generally superior attitude toward American and things American shown by citizens of the British Empire encountered during a world survey of refrigeration and air-conditioning markets.

End result of such readings is not only a renewed respect for the Constitution and the American system of government—as one which was devised by a body of brilliant scholars after the most careful study of history, previous forms of government, and political philosophers from Plato to Rousseau—but a renewed adulation of that body of remarkable men who lived and thought and worked in those days to establish a foundation for the nation that was to provide the freest and happiest

life for the most people of any country the world had yet seen.

There were giants in those days: Madison, Jefferson, Hamilton, Adams, Henry, Washington, Paine, Pierce, Martin, Gerry, Morris, Randolph, and the greatest of these was Benjamin Franklin.

Printer, publicist, essayist, versifier, humorist, scientist, inventor, organizer, soldier, statesman, diplomat, and preeminently a philosopher (recognized in England, France, and in fact all Europe, as the greatest philosopher of the age) Benjamin Franklin has a valid claim to veneration as our Greatest American.

### Common Sense

On the anniversary of Franklin's birth, Jan. 6, the writer began reading Carl van Doren's voluminous and illuminative new biography of Franklin. It was a revealing study of a self-educated man, a true scholar who, unlike so many scholars, was blessed with what we like to call "common sense."

Our current crop of intellectuals, the Debunking Brigade, seems wont to belittle "common sense." Their attitude toward the wisdom born of experience is like that of a scholastic friend of mine who objected to the term, "human nature." "There isn't any such thing," he scoffed.

But "common sense" is simply another term for the scientific method of arriving at knowledge. You start without preconceived notions, and you make experiments until you find out what works and what doesn't.

### Philosopher on Economics

Franklin, like all Americans of that period, had to work hard to make a living. He was most conscious of the fact that he lacked education. So he read, studied, worked, experimented. He formed societies with other serious-minded young men, who also read and studied, with whom he could debate and pool experience. What they arrived at was the Socratic method of self-education.

Van Doren's book is largely a compilation of Franklin's writings, exhumed from letters, essays, and papers. And it is interesting to note some of the "common sense," or practical wisdom, Franklin had to offer on economics.

### Price Fixing

For example, in devising a plan for dealing with the Indians in 1767, Franklin wrote:

"It seems contrary to the nature of commerce for government to interfere in the prices of commodities. Trade is a voluntary thing between buyer and seller, in every article of which each exercises his own judgment and is to please himself."

### Preparedness

With regard to preparedness for war:

"Our great security lies, I think, in our growing strength both in numbers and wealth; that creates an increasing ability of assisting this nation in its wars, which will make us more respectable, our friendship more valued and enmity feared; thence it will soon be thought proper to treat us not with justice only but with kindness, and thence we may expect in a few years a total change of measures with regard to us; unless, by neglect of military discipline, we should lose all martial spirit, and our western people become as tame as those in the eastern (Asiatic) dominions of Britain, when we may expect the same oppressions; for there is much truth in the Italian saying, 'Make yourself sheep, and the wolves will eat you.'"

Incidentally, it was also his observation that "there never was a good war or a bad peace."

### Man Over Matter

Franklin was honored by learned societies everywhere for his pioneering in the field of electricity, in conductivity, light, horticulture, meteorology, evaporation, phonetics; also for his studies of heating and ventilation. The Franklin stove was of great consequence in a world which hitherto had been heated on only one side by fireplaces.

It was also a time of universal belief in the poisonous qualities of night air. Franklin slept with his windows wide open, and lived to be a useful, robust octogenarian. He was also a pioneer sunbather. And he invented a musical instrument, the armonica, which had a wide vogue for many a year.

"The rapid progress true science now makes," he wrote in 1780, "occasions my regretting sometimes that I was born so soon. It is impossible to imagine the height to which may be carried, in a thousand years, the power of man over matter. . . . O that moral science were in as fair a way of improvement, that men would cease to be wolves to one another, and that human beings would at length learn what they now improperly call humanity."

Right on both counts, 159 years later!

### Suspended Animation

On another occasion he wrote:

"I wish it were possible, from this instance, to invent a method of embalming drowned persons in such a manner that they may be recalled to life at any period, however distant; for having a very ardent desire to see and observe the state of America a hundred years hence, I should prefer to any ordinary death the being immersed in a cask of Madeira wine, with a few friends, till that time, to be then recalled to life by the solar warmth of my dear country."

And what a pity it is that he couldn't invent a means (such as suspended animation by freezing, which is currently a matter of excited conjecture) of making his wish come true; first, so that he might see what rapid advances science has made, and especially electricity; and second, that his wise counsels and unmatched talent for conciliation might be heard in our legislative halls.

### As a Gallant

In his late seventies, Franklin represented the young American nation in France, enlisting her military aid and, more important, her loans. His wife having died much earlier, he eventually paid court to the beautiful Madame Helvetius, who had inspired one of the most famous compliments of all times.

When she had been introduced to Fontanelle, that centenarian bowed and wished: "Ah, madame, if I were only eighty again!"

And when Franklin, immersed for a few weeks in affairs of state, neglected visiting her, Madame Helvetius wrote inquiring when she could expect his next visit. Franklin answered:

"Madame, I am waiting till the nights are longer."

### On Diplomacy

Despite the fact that he was the most effective diplomat and statesman of his time, Franklin had scant

respect for diplomats and politicians as such. He said of them:

"If the rascals knew the advantages of virtue they would become honest men out of rascality."

The truth, he pointed out, is the most useful weapon in the game of politics.

"That is my only cunning; and the politicians are so corrupt that I always fool them by this means."

### Tolerance

This wise man perceived, however, that there can be honest differences of opinion, especially in politics. His own son, William, was loyal to the British cause to the last, causing his father much grief which he never uttered until finally William wrote him.

Franklin answered that he was "glad to find that you desire to revive that affectionate intercourse that formerly existed between us. It will be very agreeable to me; indeed nothing has ever hurt me so much and affected me with such keen sensations as to find . . . my only son . . . taking up arms against me in a cause wherein my good fame, fortune, and life were all at stake."

"You conceived, you say, that your duty to your king and regard for your country required this. I ought not to blame you for differing in sentiment with me in public affairs. We are men, all subject to errors. Our opinions are not in our power; they are formed and governed much by circumstances that are often as inexplicable as they are irresistible."

In his famous speech before the Constitutional Convention, the speech which brought the various factions all together and resulted in the signing of that historic document, he said:

"Having lived long, I have experienced many instances of being obliged by better information or fuller consideration to change opinions, even on important subjects, which I once thought right but found to be otherwise. It is therefore that the older I grow the more apt I am to doubt my own judgment and to pay attention to the judgment of others. Most men, indeed, as well as most sects in religion, think themselves in possession of all truth."

"But though many private persons think almost as highly of their infallibility as that of their sect, few express it so naturally as a certain French lady who in a dispute with her sister said: 'I don't know how it happens, sister, but I meet with nobody but myself that's always in the right.'"

### Poor Richard

Franklin is best-remembered by many for his Poor Richard's Almanac sayings, his "common sense" aphorisms. Remember these?

"Always taking out of the meat-tub and never putting in soon comes to the bottom."

"Discontented minds and fevers of the body are not to be cured by changing beds or businesses."

"Men would live by their wits, but break for want of stock."

"Cunning proceeds from want of capacity."

"Old boys have their playthings as well as young ones; the difference is only in the price."

"Tis against some men's principle to pay interest, and seems against others' interest to pay principal."

"He that understands the world least likes it."

"Anger is never without a reason, but seldom with a good one."

"It is ill manners to silence a fool, and cruelty to let him go on."

"Half a truth is often a great lie."

"The first mistake in public business is the going into it."

"In a corrupt age the putting the world in order would breed confusion; then e'en mind your own business."

"Fish and visitors smell in three days."

"A countryman between two lawyers is like a fish between two cats."

"Write with the learned, pronounce with the vulgar."

"Where there's marriage without love there will be love without marriage."

"He that is rich need not live sparingly, and he that can live sparingly need not be rich."

"Approve not of him who commends all you say."

## An AMAZING OPPORTUNITY

FOR QUICK TURNOVER  
and  
EXCELLENT Profit

Here is a profit item which you can't possibly overlook. It's one that your customers will demand—that will actually sell itself.

## Electresteem

A new, electric, portable, steam radiator that plugs into any wall socket and delivers healthful steam heat in just a few moments. For full description read the accompanying national advertisement on this exceptional product.

### WILL BE NATIONALLY ADVERTISED

Electresteem will be advertised in leading magazines. The public are going to be familiarized very quickly with this unusual innovation. Already they have given every evidence that here is something for which they have been waiting for many years. Distributors and dealers, too, are showing equal enthusiasm. At the National House Furnishings Association Exhibit in Chicago last month Electresteem was the sensation of the show. Hundreds of dealers signed up on the spot.

Write today for full information on our dealer franchise. Delay on your part simply means loss of sales and profit for yourself.

IT WILL pay you TO ACT IMMEDIATELY

NEW ELECTRIC—  
Portable STEAM  
RADIATOR

Plugs into ELECTRIC WALL  
SOCKET—Uses No More  
Current Than Electric Iron



**Electresteem**  
(Approved by Underwriters' Laboratories, Inc.)

● Electresteem is a portable, patented steam radiator which provides healthful oxygen-laden steam heat merely by plugging it into any wall socket. No pipes—no special wiring necessary. It picks up cold air from the floor—heats it, and thus causes it to radiate to all parts of the room.

#### SAFE, HEALTHFUL, FIREPROOF

There are no poisonous gases or noxious fumes—no open flame or element exposed to cut down the humidity or steal the oxygen so vital to the human body. Electresteem is healthful, fireproof and danger-proof.

#### LOW OPERATING COST

Electresteem costs no more to operate than the modern electric iron. It consumes about 9-10 of a kilowatt of current per hour. Universal AC or DC. It requires little attention—just check water every thirty days.

#### LIGHT WEIGHT—PORTABLE

Electresteem is graceful, sturdy and superbly made of finest steel, yet it weighs only 40 pounds, and can be easily carried to any room. It is 23" long, 22" high and 8" wide. Heat is radiated from 18½ square feet of radiator surface. You can have Electresteem in 2 standard colors—ivory and walnut.

#### GUARANTEED

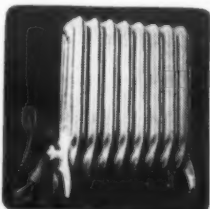
Either Electresteem must be fully satisfactory to you or you can return it in two weeks and your money will be refunded.

GET FULL  
INFORMATION  
on this amazing  
heating develop-  
ment. See your  
dealer or write us  
today.

PRICE  
\$39.50

F. O. B. Detroit

ELECTRIC STEAM RADIATOR CORPORATION  
DETROIT • MICHIGAN



ELECTRIC STEAM RADIATOR CORPORATION  
6189 TWELFTH STREET • DETROIT, MICHIGAN

REPLICA OF ADVERTISEMENT  
Appearing in National Publications



# Air Conditioning

## Fort Worth Dealers Exchange Surveys To Eliminate Costs of Duplication

FORT WORTH, Tex.—Duplication of expensive competitive surveys on prospective air-conditioning jobs has been eliminated here through the activities of the Fort Worth Air Conditioning Association, formed last June. Membership includes dealer-contractors in this city and in Dallas.

J. M. Spreklemeyer, president of the association, asserts that the system adopted here does away with much of the former expense, when every contractor who was "shopped" by some one interested in air conditioning went to the expense of a complete engineering survey.

With every major dealership represented in the association, members cooperate in exchanging survey information. The first contractor called on a given job makes his findings and reports his plan to the owner. He then files his survey with O. G. Carlson of the public relations department of the Texas Electric Service Co.

Any member of the association who goes on the job may then call Mr. Carlson and learn what load has been figured, for assistance in making up his own load estimate. Price is not given out. Every dealer-member may go to the prospect and stress the features of his own system. All compete to sell the job, which, with only slight modifications from the original plan, could be installed by any contractor in the group.

One advantage has been that the prospect hears similar stories, because sales engineers in the association have become like-minded in their thinking on air conditioning.

Commercial jobs are not always awarded to the lowest bidder, Mr. Spreklemeyer points out; the owner looks for the best combination of economy and efficiency, and detects cheapness where it appears.

No attempt is made at price-fixing. After a bid has been accepted by an owner, the complete installation price is made public. If this figure appears to be too low for fair trade practice, the offending contractor is likely to have it challenged at one of the association's weekly luncheon meetings. The association is made up of "first-name" friends.

Should the customer change his mind and not install air-conditioning equipment at all, the contractor who made the survey loses his investment. If any member of the group gets the contract, however, the firm that submitted the original plan is paid a minimum of \$50, or \$5 a ton for the preliminary estimate. This ends the necessity of duplicate surveys, and is an economy measure for the entire group.

Officers of the association are J. M. Spreklemeyer, General Engineering Co. (York), president; Jack Higgins, Baker Ice Machinery Co. of Texas, vice president; O. G. Carlson, Texas Electric Service Co., secretary-treasurer.

Other members include Vernon Brown, Gas Service Co.; Carrier-Bock of Dallas (Carrier); Murray Co. of Dallas (G-E); Lydick and Barman (Delco-Frigidaire); and Texas Air Conditioning Co. (Airtemp).

The association took its first code out of AIR CONDITIONING & REFRIGERATION NEWS, making some local modifications. In December the committee on codes appeared before the Fort Worth City Council, and received assurance that when the Joint Refrigeration Industry Committee's code (which is to be approved by the A.S.R.E.) was ready for municipal use, they would adopt it in full, since it had the approval of every member firm in Fort Worth and Dallas.

## Williamson Holds Sales Training Course

CINCINNATI—Intensive training of employees and representatives so that they may become good salesmen of heating and air-conditioning equipment has been started by Williamson Heater Co. here.

The educational campaign dovetails with the firm's 100% increased newspaper advertising campaign for 1939, says L. A. Knollman, sales manager. A three-day conference of sales representatives opened the new program, and an eight weeks' free engineering school for dealers has been started. Gilbert Denjes, chief engineer, is instructor.

Dealers completing this course, says Mr. Knollman, will be better equipped to serve home owners, since selection and installation of heating and air-conditioning units requires greater technical skill and knowledge than ever before.

Williamson company will attempt to double its present sales force, Mr. Knollman explains.

New employees first will be trained in the engineering department, then in the production department to learn how furnaces are manufactured, and finally in the retail sales department.

For Information on Motors  
FOR ALL TYPES OF  
Air Conditioning and  
Refrigeration Equipment  
WRITE TO

Wagner Electric Corporation  
1401 E. 14th Ave. St. Louis, Mo.

**BRUNNER**  
Send for the New  
REFRIGERATION CATALOG  
Seven Models of Compressors  
Fifty-eight Models of High-  
sides from 1/4 H.P. to 15 H.P.  
BRUNNER MANUFACTURING CO.  
UTICA, N. Y.

## Air Conditioning Keeps Pipe Organ In Tune

BROOKLYN—Costly repair and frequent tuning of the pipe organ which Wesley I. Steele, an organist, maintains in the remodeled stable which he has converted into a combination home and studio has been eliminated, it is claimed, by installation of an air-conditioning system which regulates the humidity closely enough to check the drying out and swelling of wooden stops and levers.

Mr. Steele, who stumbled across the 78-year-old stable in his search for a home and studio large enough to house his pipe organ, has found that by keeping the humidity constant the tone of both his grand piano and his pipe organ has been improved and that the need for tuning has been minimized.

Humidity control was decided upon after Carrier air-conditioning engineers had thoroughly studied the weather factors affecting the organ's vital wooden parts. The engineers found that if the humidity of the air was controlled, the amount of moisture in the wood remained constant.

Installation of the air-conditioning system in the building presented unique problems, inasmuch as the stable had no basement and the unit had to be placed within the conditioned area.

## 2 Successful Installations Lead To 5 More

CHICAGO—Because the air conditioning of two stores paid for itself by keeping bakery and pastry goods fresh and pleasing patrons, Sam Davidson is adding cooling equipment to five more stores in his bakery chain group.

Work on the installation will be started this month, with completion scheduled for March. Tentative plans are to air condition the three remaining stores in the chain at a later date. Contract for the present five-unit installation has been awarded to Murphy & Miller, Chicago distributor for Kelvinator.

## 'Hot' Movie Love Scenes Often Uncomfortably Hot For Actors, So Director Orders Conditioning

HOLLYWOOD, Calif.—Air-conditioned love scenes are the newest boon to better motion pictures.

Edwin Marin, a young film director imbued with new ideas, is the originator.

A graduate of the University of Pennsylvania, Marin started his film career as assistant cameraman for George Folsey, who is now Marin's head cameraman on his current picture, "Fast and Loose," starring Robert Montgomery and Rosalind Russell.

### NOT SO PLEASANT

"As ironical as it may sound," Marin explained, "it is not as pleasant as it may appear on the screen for Montgomery to attempt to make love to Miss Russell while they sweater beneath their make-up in front of the intense heat of the powerful studio lights."

To make the job of love-making in a scene more comfortable to the participants, Marin always considers the screen sweethearts first. Before the close-ups are filmed, he checks all the sound stages at M-G-M, confers with the air-conditioning engineer and follows his advice on the most suitable setting for "clinchings."

### VARIED TEMPERATURES

He selects one of the several most modern stages that are perfectly air-conditioned before he permits the sets for the close-ups to be constructed.

As the love scenes between Montgomery and Miss Russell in "Fast and Loose" are in a comedy vein, the

temperature of the stage is set at 67°. Marin explains that different stars require varied stage temperatures for their love scenes.

Greta Garbo usually does her scenes in a temperature of 65°. The sound stages for Joan Crawford and Myrna Loy average 70. For Norma Shearer the stage is cooled to 71°.

## Illinois 'U' Puts Air Course on Air

URBANA, Ill.—Air-conditioning problems were put right on the air as the University of Illinois' station WILL began what is said to be the first broadcast of a whole semester's problems in air conditioning on Feb. 14.

The series, known as Home Heating and Cooling, will feature discussions every Tuesday afternoon throughout the remainder of the school year to be given by members of the teaching and research staff of the Department of Mechanical Engineering. Material presented will be leveled at the home occupant.

Operating since 1922, the station is one of the nation's pioneers, and is considered one of the leading educational stations. No commercial programs are transmitted over the station. The station operates on a frequency of 580 kilocycles, and covers most of Illinois (including Chicago), and parts of Indiana, Kentucky, Iowa, and Wisconsin.

## Pittsburgh Bureau Plans Educational Meetings

PITTSBURGH—Educational meetings of interest to air-conditioning executives, sales managers, engineers, salesmen, and installation men make up the winter program of the Air Conditioning Bureau of Pittsburgh, according to F. B. Mahon, of the Duquesne Light Co., who serves as secretary of the organization.

While the Pittsburgh group is made up of nine firms who are actively engaged in the commercial air-conditioning business, meetings attract from 30 to 45 men, depending upon the subject under discussion.

At a recent meeting here Carl F. Boester, air-conditioning engineer of St. Louis, addressed the association on "Refrigeration Storage in Air Conditioning." Mr. Boester has been an advocate of this method of handling certain types of cooling applications for a number of years, and has supervised the installation of a number of storage-type air-conditioning systems.

Mr. Mahon states that the Pittsburgh group has responded well to this type of program, and that the organization plans to continue educational work throughout the year.

Officers recently elected by the Pittsburgh Bureau include: T. King McCreery, T. King McCreery, Inc. (G-E), chairman; and F. C. Devlin, Electric Products Co. (Frigidaire); W. C. Sutherland, Danforth Co. (Westinghouse); and A. D. Holcroft, Standard Air Conditioning, Inc. as members of the executive committee. Mr. Mahon is secretary of the group.

Now a Complete Line, Competitively Priced . . .

# DELCO-FRIGIDAIRE

## HEATING AND AIR CONDITIONING PRODUCTS



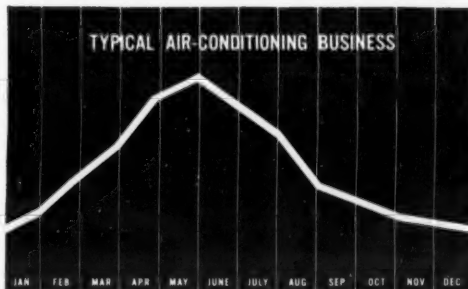
Provides the Outstanding Opportunity for a Profitable Year-'Round Business

• New and improved products! New advertising! New selling tools! Newly enlarged field organization, and the most complete line of automatic heating and air conditioning products in existence, now combine to make a Delco-Frigidaire franchise more profitable, more desirable than ever before.

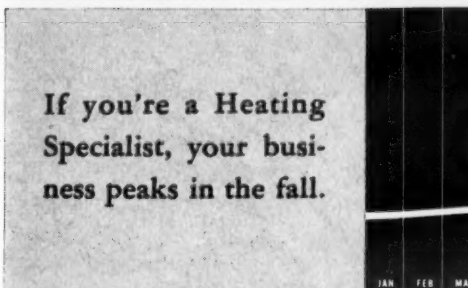
### Full line selling makes year-'round profits

To increase your total volume of business, to guard against seasonal slumps, to provide year 'round employment for salesmen and to make more money for yourself, consider the sales advantages of the Complete Delco-Frigidaire Line—the line that masters competitive situations through merit of product, fairness of prices, and the well known name of General Motors.

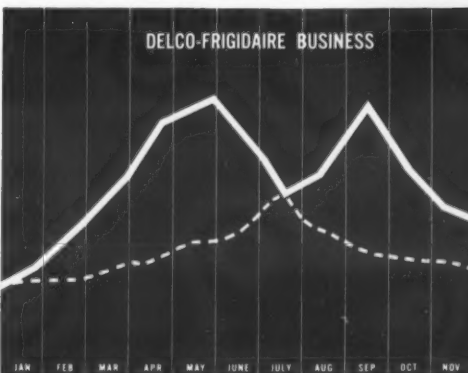
Study the above charts . . . See how the Delco-Frigidaire combination heating and air conditioning business fills out a 12 months' selling season, making it practicable for you to keep your salesmen on a year 'round basis by directing sales efforts from heating to air conditioning



If you're an Air Conditioning Specialist, your business peaks in the spring.



If you're a Heating Specialist, your business peaks in the fall.



**But—**

If you're a Delco-Frigidaire Dealer, you have a year 'round business.

A peak business with no deep sales valleys . . . in products which form a natural, logical combination with a practically unlimited market. An unequalled opportunity for year 'round profit.

and back again according to season. Before you make any plans for this spring, get all the facts about the complete, money-making Delco-Frigidaire line. If you are now a 100 per cent heating man, learn how easy it is to tie air condition-

ing into your business and profit thereby. If you are a 100 per cent air conditioning man, let us tell you how to cash in on the heating business in your territory also. Mail coupon today. You will not be obligated in any way.

# DELCO-FRIGIDAIRE

DIVISION GENERAL MOTORS SALES CORPORATION

## AIR CONDITIONING & HEATING PRODUCTS

Unit Air Conditioners • Portable Air Conditioners • Commercial Air Conditioning  
Oil Burners, Stokers, Oil & Gas Furnaces • Oil & Gas Winter Conditioning Units

## YOUR OPPORTUNITY COUPON

Mail it Today!

Delco-Frigidaire Conditioning Division  
General Motors Sales Corporation ACRN-2  
Dayton, Ohio

Please send me complete information regarding a Delco-Frigidaire dealer franchise backed by General Motors.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



## AIR CONDITIONING & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office;  
Established 1926 and registered as  
Electric Refrigeration News

Published Every Wednesday by  
BUSINESS NEWS PUBLISHING CO.  
5229 Cass Ave., Detroit, Mich.  
Telephone Columbia 4242

Subscription Rates  
U. S. and Possessions, Canada, and all  
countries in the Pan-American Postal  
Union: \$4.00 per year; 2 years for \$7.00.  
All other foreign countries: \$6.00 per year.  
Single copy price, 20 cents. Ten or more  
copies, 15 cents each; 50 or more copies,  
10 cents each. Send remittance with order.

F. M. COCKRELL, Publisher

GEORGE F. TAUBENECK, Editor  
PHIL B. REDEKER, Managing Editor  
THEODORE T. QUINN, Assistant Editor  
Staff Reporters: JAMES MCCALLUM,  
ALFRED JONES, HENRY KNOWLTON, JR.,  
ROBERT M. PRICE, and JANE LAING

R. T. CARRITHERS, Advertising Mgr.  
HELEN K. GILMORE, Asst. Adv. Mgr.  
JAMES B. SMITH, Asst. Adv. Mgr.

JOHN R. ADAMS, Business Manager  
ROBERT P. NIXON, Asst. Business Mgr.  
LOLA E. DEW, Subscription Manager

Member, Audit Bureau of Circulations  
Member, Associated Business Papers

VOL. 26, No. 7, SERIAL No. 517

FEBRUARY 15, 1939

Copyright, 1939, Business News Pub. Co.

## Democracy Eating Itself Up

The old theory of our fathers is the true theory. Let us have a poor government and a rich people—light taxes and abundant individual enterprise, economical expenditure and steady prosperity, a general government strictly limited to its sphere, and state governments respected and honored because competent and ready to protect the rights and guard the interest of the people.

—Salmon P. Chase,

Lincoln's Secretary of the  
Treasury and Chief Justice  
of the Supreme Court.

ABRAHAM LINCOLN's birthday was celebrated Sunday with unusual attention. Magazines, newspapers, radios, and the movies all presented reminiscences of the most appealing of all our public figures. Best play currently running in New York is Robert Sherwood's "Abraham Lincoln in Illinois," whereby thousands are weekly re-introduced to one president who really deserved the title, "man of the people."

All this re-examination of the deeds and sayings of Honest Abe comes at an opportune time. America currently stands, puzzled and perplexed, at a crossroads of historical magnitude. One direction points toward government control (the European Way), and helping Europe fight its wars. The other road is that of private control, individualism (the American Way), minding our own business, and peace.

Politicians stand for government control, and history shows that when they are in the saddle, wars follow. Business men stand for private control, and hate war, because it interrupts business (note how the stock markets dip at every threat or hint of war). These observations on the course of history are quite clear to many—but not nearly enough—of the people. What bothers a good many of us is that in the current debating over which road we shall travel, the voice of business seems subdued.

At this juncture comes a slim volume entitled "You and Your Money," by C. Donald Dallas (published by Prentice-Hall at \$1.50). In it will be found tables, statistics, and reasoning which

every business man can use in his contacts with the press and his representatives down at Washington to help make clear the case for business.

He begins with a timely quotation from Abraham Lincoln:

"Property is the fruit of Labor; property is desirable; it is a positive good in the world, that some should be rich shows that others may become rich, and hence is just encouragement to industry and enterprise.

"Let not him who is houseless pull down the house of another, but let him work diligently and build one for himself, thus by example assuring that his own shall be safe from violence when built."

And then he proceeds to develop a thesis which was used by the NEWS in its editorial, "The Trader vs. Planned Economy," which appeared in the Aug. 17 issue. Mr. Dallas states the thesis as follows (the paragraphs quoted do not appear consecutively throughout the book, but are employed to introduce new data and proofs):

### Peace and Capitalism

"Capitalism, trade, and prosperity flourish under conditions of peace, law, and order and suffer from war, lack of confidence, and disorder.

"The glory of the American economy is that any laboring man has the opportunity to rise from the ranks to the top, and most of our industrial leaders of today have so risen. It is this that distinguishes American industrial democracy from its European counterpart.

"Capitalism or the Profit and Loss System means private property, personal initiative, thrift, personal risk, and freedom of economic forces. Its rewards go to those who work, who save, who invent, who dare. It continually means new industries adding to the wealth and comfort of all the people and provides the taxes to run the Government.

"It means and has meant in our history as a nation, higher and higher wages, shorter and shorter hours, and lower and lower selling prices bringing an increased variety of goods at lower and lower prices to more and more people.

### Doctrine of Scarcity

"The doctrine of scarcity, of restricted production in factories and on farms in order to bring about higher prices, obviously lowers the standards of living, destroys its consumer market, reversing this process. The way to produce wealth is through production and more production at lower and lowest costs."

The confusion of the American "liberal" mind which, as Christopher Morley puts it, "would shed the last drop of English blood to break up the dictatorships" (yet which would put America under a planned economy, i.e., dictatorship) and which now seems prepared to shed the last drop of American blood to keep England's colonies and France's colonies intact, is noted by Mr. Dallas. He, too, sees how the tougher-minded radicals have taken over the "liberals" and used them for their own ends.

"The Liberal government in England, full of theories that did not work, culminated in 1926 with a stagnation of industry, a general

## They'll Do It Every Time . . . By Jimmy Hatlo



strike, then mutiny in the navy, and England lay unarmed and helpless before the rising power of Mussolini, Hitler, and Japan. (The French New Deal is going the same way.)

"Liberals have been working for a more even distribution of wealth, a little more at the bottom and a little less at the top, more to the man who works or creates and less to the speculator or to those who only inherit. But the liberals as usual have bungled it, because they lack practical experience, and the radicals and demagogues have stolen the 'show' in most countries and pushed the liberals into the discard.

"Pagan forces are now sweeping over the world that not only threaten our economic progress but our liberties as well. These forces are revolutionary and not evolutionary. These forces capitalize the spirits of envy, hatred, and fear; they are motivated by a lust for the achievement of power and wealth, by a short cut instead of by production and invention, and they are backed up by propaganda and 'smear' campaigns that for size and misrepresentation have never been equaled.

"Wealth is theoretically being redistributed by Taxation, but in reality it is being destroyed."

The basis of all the "liberal" attacks on business is that earnings aren't fairly distributed. The fallacious "liberal" solution is that better distribution of earnings can be had through adopting foreign systems of governmental control. Anyone who has ever observed the wide gulfs which exist between economic "classes" in foreign countries knows how much better the American Way of private initiative has functioned in the matter of elevating the living standards of the masses. "Seeing is believing," but since so many have no opportunity of seeing for themselves, the defenders of liberty are obliged to fall back upon cold statistics. Mr. Dallas chooses these figures of the hourly earnings of steel workers (a basic industry in many countries):

Japan	10¢	1937
Belgium	17¢	1937
Italy	20¢	1937
Sweden	32¢	1937
Germany	34.5¢	1936
France	39.5¢	1936
Great Britain	40¢	1937
United States	82¢	1937

Unfortunately, these figures do

not show how much more an American laborer can buy for his money. They not only get higher wages, they can obtain more for their money here, in the way of better food, better housing, better sanitation, better comforts, and better entertainment.

### Real Wages Rise

It's difficult to picture this difference with figures. However, Mr. Dallas does show how sharply wages have risen in comparison with the cost of living in the last quarter century in America. The year 1913 is employed as a base year, with an index number of 100.

(A) Indexes of Average Wholesale Prices, Cost of Living, and Hourly Wages, Etc., 1913-1937

Year	General Commodity Index	Cost of Living	Aver. Hourly Wages	% Net to Gross All Corps.
1913	100.0	100.0	100	....
1914	97.5	102.7	102	....
1915	99.5	104.7	103	....
1916	122.5	116.6	111	....
1917	168.2	138.3	128	9.39
1918	188.1	166.9	162	5.38
1919	198.5	171.1	184	6.38
1920	221.2	211.3	234	3.75
1921	139.8	179.1	218	-0.06
1922	138.5	169.0	208	4.32
1923	144.1	171.8	217	4.89
1924	140.4	172.3	226	4.17
1925	148.2	176.7	226	5.09
1926	143.2	178.7	229	4.74
1927	136.6	177.7	231	4.06
1928	136.5	172.9	232	4.83
1929	136.5	172.8	233	5.01
1930	123.8	170.3	229	0.99
1931	104.5	153.9	217	-2.91
1932	92.9	138.9	186	-6.58
1933	94.4	129.8	178	-2.82
1934	107.4	136.5	200	-0.50
1935	114.6	140.2	205	0.92
1936	115.7	142.9	211	2.00
1937†	125.9	147.2	234	3.00

†July. ‡Preliminary. §Not yet available. \*Average 1909-1914 = 100.

Source: United States Bureau of Labor Statistics, Washington, D. C. The last column, which shows the average per cent of net income to gross for all corporations operated for profit in the United States is compiled from the Treasury Statistics of Income.

An interesting notation can be made on the last column of figures in the above tabulation, that on corporation profits. The common "liberal" assumption is that American corporations make outrageous profits, and that government can "spend and spend, tax and tax" indefinitely. These figures show that corporations have averaged less than 3% on their invested capital during the last quarter century. And, Mr. Dallas points out, "according to the figures of the United States Government, Labor receives 84% of the income produced by American manufacturers, and this payroll comes immediately and first regardless of whether the manufacturer operates at a profit or a loss."

### Contradictory Policies

Even so, the present Administration continues to operate on the theory that it can spend profits which do not exist and destroy capital (Democracy eating itself up). It "primes the pump" to speed up business recovery with one hand, and passes regulatory laws which prevent that recovery with the other. Observes Mr. Dallas:

"Conflicting and constantly changing laws also hampered industry, as, for instance, the NRA, the Guffey Coal Act, and the Putman Act all tend to produce monopoly and uniform prices and to prohibit free competition all are in direct contradiction of the Sherman Anti-Trust Law, and yet both the Patman Act and the Sherman Act are on the books and carry penitentiary sentences for their violation.

"Yet today the cost of government in the United States is over 17 billion dollars a year, estimated to be between 20 and 25% of the total national income — about double the rate of years prior to the depression and against only 7% in 1890, and the cost is still rising.

"So great is it that if all incomes in the country of \$5,000 and over were confiscated, we would only collect enough money to pay the cost of government for less than four months.

"There are over 175,000 taxing bodies in the United States today representing the most complicated and disorderly tax system in the world. Furthermore, this taxation is generally levied against the production of wealth, instead of against idle property and capital."

### Dallas's Book Deserves Wide Circulation

In the limited space of his new book, Mr. Dallas can make but a fragmentary statement of the case for American business. Nevertheless, the facts which he does spotlight should be placed under the nose of every American legislator, and should be publicized far and wide to help counteract the propaganda of the False Prophets who have held the ear of the American public so long.

Truth can prevail, but first the truth must be made known.



## Profitable Sales Deas

### 'Make It Easy For Prospects To Buy' Is Theme of Westinghouse Sales Movie

MANSFIELD, Ohio—"Make it easy for the prospect to buy." That's a theme song of modern appliance selling, as dramatized in a motion picture on appliance selling methods prepared under the direction of Gil Baird of the Westinghouse sales promotion department, and being shown to Westinghouse distributors and dealers all over the country.

The movie depicts the application of five selling steps on the showroom floor. However, it is presumed that these selling steps would be just as applicable on a canvass call to a prospect's home.

#### FIVE 'MOVES'

The five "moves" which the salesman should attempt to make in talking to a prospect are, in order of their sequence, as follows: (1) classify the prospect; (2) make the presentation accordingly, on the basis of the classification; (3) ask for a commitment; (4) answer the prospect's objection; (5) ask for the order.

Classification of the prospect is Step No. 1 because if the salesman fails to find out what the prospect knows and wants to know about an electric refrigerator or other appliance, he is likely to lose her interest very quickly.

"Is this your first experience in buying a refrigerator?" is one suggested approach. Idea behind this is to find out if the prospect has used an electric refrigerator before, and thus whether it is necessary to go into considerable detail on the matter of automatic food protection.

#### ANOTHER APPROACH

Another suggested approach in the first step of classifying prospects is to inquire, "What particular features are you looking for in an electric refrigerator?" Usually the prospect has a predetermined notion about some of the features that she is seeking in a new electric refrigerator, and this question will give the prospect something on which to build a conversation.

One of the principal thoughts behind Step No. 1 is to get the prospect to talk—to explain what she is looking for—to make her job of buying easier. And it affords the sort of a start that is much more likely to get and hold the prospect's attention than one in which the salesman says, "You're looking for a refrigerator—well step right over and look at our 6-cu. ft. \$159.50 job. It has, etc."

Once the prospect has been classified, the salesman should then make his presentation accordingly, being careful to put emphasis on the features which the prospect has mentioned. The presentation should be thorough and unhurried, and should be built mainly about what benefits the prospect will receive through the use of the appliance.

#### CLOSING THE SALE

Following the presentation, the salesman should ask for a commitment. There are several ways of leading into this, it is pointed out in the Westinghouse movie:

1. The salesman can use a direct attack, such as "What size refrigerator can I make out the order for?"

2. He may approach the subject by discussing the price. "Now this particular refrigerator will be so much if paid for in cash, or so much more if bought on terms. How did you wish to pay for it?"

3. The salesman may be somewhat less direct, merely asking if he can "lay the refrigerator away" for the

prospect until the prospect reaches her final decision.

Salesmen well know that there are mighty few prospects who will sign on the dotted line when the salesman first asks for a commitment. The prospect usually has some stock objection—"not ready to buy just yet"; "have to talk it over with another member of the family"; "want to look around some more."

This leads into the fourth step in the selling process, answering the objections of the prospect to an immediate commitment.

In this step of the selling process, the "yes, but" technique is strongly emphasized in the Westinghouse movie on selling. It is advocated that the salesman seemingly agree that the prospect's reasons for not buying immediately are sound, but then to go ahead with all the other and better reasons why an immediate purchase would be advantageous.

#### 'NOT READY NOW'

Since the usual objection made by the prospect is that he is interested, but "not just yet ready to buy," the salesman is advised to be well up on his arguments to meet the "not ready now" objection of the prospect. The salesman should have at his command a whole battery of reasons why it would be more advantageous to purchase immediately.

One point made in the Westinghouse movie that such an objection offers the salesman an excellent opportunity to bring in the "savings through large-purchase buying" argument for electric refrigeration. A salesman who has this argument well in hand, it is pointed out, can demonstrate that the prospect is actually losing money every minute that he doesn't own an electric refrigerator.

#### EASY TERMS

If the prospect argues that he "hasn't the cash," the way is opened for the salesman to bring in the "buy it on easy terms" argument, and point out the advantages of financing the purchase over a period of time, again bringing up the matter of actual savings that can be realized through the use of a refrigerator to offset the cost of its purchase.

The prospect may demur that the purchase must be discussed with other members of the family. This paves the way for the salesman to make an appointment for a home call, where he can present the story to all who may have a hand in buying the refrigerator, and where it is easy to go into the Step No. 5, which of course always follows no matter what happens during Step No. 4, because it is the one thing which must be done to make the sale. It is, of course: To ask for the order.

### Baltimore Westinghouse Branch Enlarged

BALTIMORE—Baltimore branch of Westinghouse Electric Supply Co. has extended its territory to cover all of western Maryland, and also has added five bordering counties in West Virginia.

The branch has relinquished the eastern shore area to the Wilmington, Del. branch of the company. John Nelson, formerly with the local office of Westinghouse Electric & Mfg. Co., has been appointed sales representative for the supply branch in the new western Maryland and West Virginia territory.

### Home Economist Seeks Advice of Prospects on Cooking To Win Their Confidence & Goodwill

SHERMAN, Tex.—"Ask advice occasionally, don't always offer it," suggests Mrs. Vena Phillips, home economist of Texas Power & Light Co.'s local branch, "if you want to win the confidence and goodwill of your customers." For it is chiefly around this precept that she has built her reputation as a home economics expert.

Mrs. Phillips gives at least one in-the-home demonstration of every range sold by any local appliance company. If the lady of the house is willing, Mrs. Phillips prepares a complete meal for the entire family. If, however, the housewife doesn't desire such a complete and convincing demonstration, Mrs. Phillips just goes through the routine explanation of the range's features, methods of operation, and possible uses.

In any case, before she leaves, Mrs. Phillips presents the lady with a little pad and asks her to jot down on it

any questions about the operation or use of the range which may occur.

"Besides," she adds (and here's the really tempting bait), "you'll be discovering for yourself new things to cook and different ways of cooking them—and I'd like to have you help me learn these new things, too."

This masterful touch changes the complexion of the customer's relations with Mrs. Phillips just as much as her favorite brand of rouge changes the complexion of her face.

Enthusiased by the thought that she is being helpful rather than helpless, the woman works her range overtime, trying out all sorts of schemes.

So by the time Mrs. Phillips calls back (usually about a week or 10 days after the demonstration) the housewife not only has her questions ready but she is "straining at the bit" to tell all about the results of her experiments, and Mrs. Phillips is an attentive listener.

### Largest Hotpoint Order For Calif. Is Shipped

REDDING, Calif.—Largest single delivery of Hotpoint appliances ever shipped to California, consisting of 392 ranges and water heaters, has been sent by Edison General Electric Appliance Co. to Pacific Construction Co. at Shasta Dam project, 14 miles north of here, and to Roy Brown, local Hotpoint dealer.

Pacific Construction Co. received 131 ranges and an equal number of water heaters to be installed in the four-and-five-room wooden homes the firm is building for engineers, executives, and other workers on the Shasta Dam.


Remainder of the Hotpoint shipment of ranges and water heaters went to Mr. Brown.

C. E. Allen, sales manager of Electric Kitchen Appliance Co., Inc., San Francisco distributor, and Douglas S. Aiken, Pacific Gas & Electric Co., cooperated to obtain the contract from Pacific Construction Co.

## Meat Protection and Display . . . with VALVES



● One of Sixteen King Richard's Meat Markets—ALL using

**KELVINATOR EQUIPMENT AND  VALVES**

When Sixteen out of Eighteen Modern Markets in one famous Chain standardize on Kelvinator Equipment and A-P Valves, it is distinct tribute to that equipment, to the Valves and to the Installing Engineer.

In King Richard's Market, above, six No. 210 A-P Thermostatic Expansion Valves have been operating without adjustment or change for over 18 months. Typical A-P Performance, this is one reason why Refrigeration Engineers are switching to A-P Valves and Solenoids—for assurance of greater Dependability and accurate control on any size installation.

**AUTOMATIC PRODUCTS COMPANY**

2450 NORTH THIRTY-SECOND STREET  
MILWAUKEE WISCONSIN

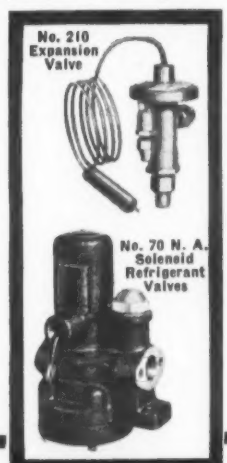
Export Department, 100 Varick Street, New York City

Refrigeration Parts Jobbers, Who Recognize Quality, Stock  Controls

**DEPENDABLE**

THE BYWORD FOR A-P VALVES

- Installation . . .  
King Richard's Meat Market  
360 Johnson Ave.  
Brooklyn, N. Y.
- Refrigeration Equipment . . .  
Kelvinator Corporation  
5 H.P. KELVINATOR Compressor  
Special Air Cooled
- Installed and maintained by . . .  
Bedford Refrigeration Service Corp.  
New York, N. Y.
- Valves . . .  
Six No. 210 A-P Expansion Valves  
Operating over 18 months without  
adjustment or change.



## The Preferred METHYL CHLORIDE for Service Work

High Purity  
and  
Dryness

Prompt Shipments  
Coast-to-Coast  
Distribution

Technical  
Service  
Always Available

**DU PONT**  
REG. U.S. PAT. OFF.

**Artic**  
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO. INC.

The R. & H. Chemicals Dept.

Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco



# Air Conditioning

## Where Air-Conditioning Systems Were Installed In Chicago In 1938

(Compiled by Commonwealth Edison Co. Air-Conditioning Division)

Name and Address	Installation	Hp.	Tonnage
------------------	--------------	-----	---------

### Amusements

Stevens Recreation, 757 E. 79th St.	G-E-Stevenson	27	25
Spencer Recreation Bldg., 3245 N. Cicero	G-E Heat. Sys.	60	50
Turner Recreation, 7937 S. Chicago Ave.	Kelvinator-M. & M.	20	20

### Banks

Central National Bank, 728 W. Roosevelt	Kelvinator-M. & M.	3	3
Federal Home Loan Bank, 105 W. Monroe	Airtemp-M. & H.	35	25
Northern Trust Co., La Salle & Monroe	Carrier	126.75	100

### Beauty Shops

Curly Q Shop, 904 E. 55th St.	West-Kroeschell	5.25	5
E. Rohde, 5359 Sheridan Rd. (Add'l.)	Kelvinator-M. & M.	3.25	3
Excelsior Beauty Parlor, 3837 Broadway	York-West. & Camp.	5.25	5
La Fleur Salon, 4007 Broadway	Kelvinator-M. & M.	3.25	3
Margaret Gottlieb, 1350 E. 53rd St.	Frigidaire-Emp. Cool.	3	3
Wilma Hall, 1748 E. 55th St.	York-West. & Camp.	5	5
Bel Ray Beauty Parlor, 4834 Sheridan Rd.	Carrier-West. Hair	5.25	5

### Church

Servite Chapel, 3117-41 W. Jackson Blvd.	West-Kroeschell	5.75	5
--	-----------------	------	---

### Doctors & Dentists

Haus, Alfred, 104 S. Michigan Ave.	Carrier-Air Comfort	6	5
Hupnicki, Joseph, 3103 S. Morgan St.	Frigidaire	7	6

### Funeral Parlor

Hevens Funeral Home, 7918 South Park	Carrier-Air Comfort	7.50	7.50
--------------------------------------	---------------------	------	------

### Hospitals

Edgewater Hospital, 5700 N. Ashland (Add'l.)	Par-Baldwin	2.50	2
Mt. Sinai, 1519 California Ave.	Carrier-Adv. Heat.	5	5

### Hotels

St. Clair Hotel, 164 E. Ohio St.	G-E-Adv. Heat.	16.50	15
Stevens, 710 S. Michigan Ave.	Carbondale	820	500
Stevens Hotel, 700 S. Mich. (Priv. Din.)	Frick-Midwest	11.50	10
Stevens Hotel, 700 S. Michigan Ave.	Frick-Midwest	16.50	15

### Bakery

Sunkist Pie Co., 3548 S. Shields Ave.	Frick-Midwest	15	15
---------------------------------------	---------------	----	----

### Candy

Culinart Products, 927 W. Concord Place	Vilter	8.25	7.50
Kimbell Candy Co., 6558 W. Belmont	Vilter	15	15

### Printing

Beatrice Creamery, 1526 S. State St.	Carrier-Air Comfort	1.50	0
Chicago Tribune Roto, 427 E. Ontario St.	Frick-Graves	45	40

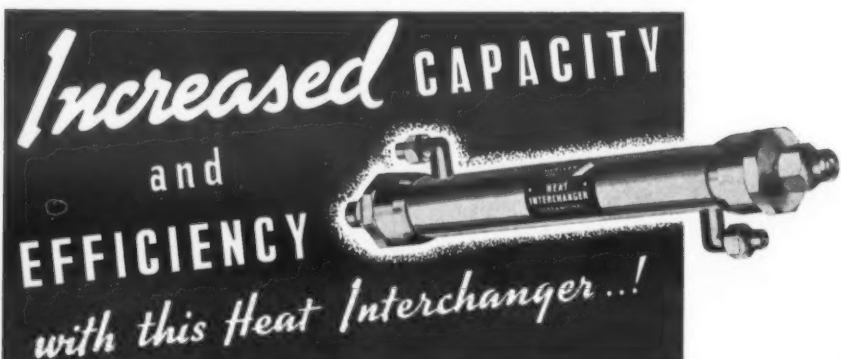
### Miscellaneous

Chicago Rotoprint, 4601 Belmont Ave.	General Electric	92.50	75
Gaertner Scientific Co., 1201 Wrightwood	Carbondale-Witten.	6	5
Montgomery Ward, 619 W. Chicago Ave.	Kelvinator-M. & M.	2	2
Vienna Beauty Products, 216 N. Clinton	Lipman-Gen. Ref.	10.75	10

### Offices, General & Building

Advance Heating Co., 117 N. Desplaines	G-E-Advance Heating	6	5
Aircure Sales, 33 N. La Salle	Carrier-Air Comfort	5.25	5
Airtemp Const., 830 N. Rush St.	Airtemp-Mehr. Han.	13	12
American Express, 178 N. Michigan Ave.	Carrier	21	20
American Furniture Mart, 666 Lake Shore	Carrier-Air Comfort	3.25	3
American Linen Supply, 829 N. Franklin	Stand-Air	5.25	5
American Sanitary Rag Co., 1001 W. North	Kelvinator-M. & M.	3.25	3
Appleton Electric Co., 1713 Wellington	Mills-Hoier	30	23
Arcade Club, 1126 Granville Ave.	Koolroom-Ind. Trail	5.25	5
Chicago & Alton RR, 340 W. Harrison St.	Baker-Burge	23	20
City Hall, Washington & Clark Sts.	Fairbanks-Morse	6.50	6
Claredon Club, 874 N. Wabash Ave.	U. S. Air Cond.	1.50	0
Commercial Safe Deposit, 135 S. Clark St.	West-Kroeschell	35	25

(Continued in Columns 4 and 5)



Increased CAPACITY and EFFICIENCY with this Heat Interchanger...!

• This new Mueller Brass Co. Heat Interchanger, owing to its shell and tube construction, provides maximum heat transfer with minimum pressure drop. This compact unit can be easily installed near the evaporator outlet where it will be most efficient. Furnished in two sizes with 79 and 170 square inches of heat transfer service.

Order through your jobber.

**MUELLER  
BRASS CO.**  
PORT HURON MICH.

## New Cutler-Hammer Commercial Control Line Is Introduced

MILWAUKEE—New line of commercial refrigeration controls having a simplified design and a wider range of operation has been introduced by Cutler-Hammer, Inc. In addition to types for standard temperature and pressure applications, the line includes a dual control which has a combination of high-pressure cut-off with either temperature or low pressure controls, said to provide protection against excessive pressure.

Positive overload protection is claimed by the combining of the standard controls with the company's regular thermal overload unit. Controls are designed for ease of mounting and wiring, as well as having a new modern appearance.

Type "P" is a pressure control, designed for refrigerating and air-conditioning installations. Differential and range settings are visible at all times without removing the switch cover. Type "PO" incorporates the same control mechanism, but is combined with the thermal overload switch in a slightly larger case. For this type, a wide range of heater coils is available, to provide protection for any motor within the switch ratings. Heater coils are interchangeable with those used in any of the company's domestic or commercial controls, as well as two starter models.

Types "T" and "TO" are designed for temperature control. Type "T" features a visible indication of both range and differential settings, and a screw-driver adjustment which is self-locking and is said to be unaffected by shock or vibration. Type "TO" has the same control mechanism, combined with a eutectic alloy thermal overload switch. This model also has interchangeable heater coils. Types "H" and "HO" are high-pressure cut-out controls. Type "H" is designed to be connected in the high-pressure side of a compressor, to provide what is described as a positive cut-out should the head pressure rise beyond a pre-determined danger point. It also has visual indication of range and differential settings.

This control can be combined with the thermal overload relay in a single enclosure, slightly larger than the regular control. Control with overload, known as the "HO," carries the same ratings and settings as type "H," with a wide range of heater coils available.

Dual controls—types "PH" and "TH," consist of standard pressure or temperature controls combined in a single case with a high-pressure cut-out. Connected on the high-pressure side of the condenser, the cut-out is said to provide protection against the danger of excessive pressure which might cause damage to the system.

It is claimed that the high-pressure cut-out will automatically prevent the starting of the compressor, independent of the box control, until the pressure on the high side has fallen below the pre-determined setting of the high-pressure control.

## McIntire Connector Issues Data on Dryers

NEWARK, N. J.—A 10-page catalog describing and listing products in its "DFN" system for drying, filtering, and neutralizing refrigerating equipment has just been issued by McIntire Connector Co. The catalog is available to sales, installation, and service men upon application to the company.

A comprehensive review of general information on drying agents, and their properties and uses, is contained in the catalog's last three pages.

## New 'Dezert Kooler' Line Announced

LOS ANGELES—Seven models of Dezert Koolers ranging in capacity from 1,000 to 10,000 c.f.m. will be included in the 1939 line of Utility Fan Corp., local manufacturer of evaporative cooling equipment.

Improvements include a self-contained water recirculating system with motor control. The pump is self-priming, centrifugal type, with Tennite impeller. Units are supplied with baked enamel finish.

## Chicago 1938 Air-Conditioning Installations (Cont.)

### Offices, General & Building (Cont.)

Name and Address	Installation	Hp.	Tonnage
Dee, Thomas J & Co., 1900 W. Kinzie	Vilter	25	20
Fairbanks-Morse, 606 S. Michigan Ave.	F-M-Wendt-Crone	36	25
Federal Deposit Ins., La Salle & Jackson	Carbondale-Witten.	17	15
Fitzpatrick Bros., 1300 W. 32nd Place	Burge	7.50	7.50
Fixler Bros., 3900 N. Claremont Ave.	Carrier-Air Comfort	3.25	3
400 Club, 29 W. Randolph St.	Frigidaire-Baldwin	23	20
Frigidaire Div. G.M.S.C., 222 W. N. Bank Dr.	Frigidaire-Wendt-Crone	31.25	25
Griffith Laboratory, 1415 W. 37th St.	Reliance Assembled	17	15
Gym Cigar Store, 215 N. La Salle St.	G-E-III. Heat	3.25	3
Gym Club, 180 W. Randolph St. (Add'l.)	Frick-Midwest	5.50	5
Hills Bros., 221 N. Bank Dr.	Carrier-Air Comfort	8.50	8
Hollywood Club, 2827 Broadway	U. S. Air Cond.	1.50	1.50
Illinois Bell Telephone, 212 W. Washington	G-E-Corboy	18.25	13
Joslyn Mfg., 3700 S. Morgan St.	Airtemp	3.25	3
Long, W. E. & Co., 155 N. Clark St.	General Electric	3.25	3
Mathies, Ray, 2120 Lawrence Ave.	West-Kroeschell	17	15
Moore's Smoke Shop, 913 Belmont Ave.	U. S. Air Cond.	1.50	1.50
National Chemical, 3617 South May	Mills Refr. Maint.	5.50	5
National Gas & Oil Sales, 2429 W. 28th St.	Carrier-Adv. Heat.	17	15
North German Lloyd, 130 W. Randolph St.	York-West. & Camp.	17	15
Nutrine Candy Co., 419 W. Erie St.	West-Kroeschell	5.75	5
Nutrine Candy Co., 419 W. Erie St.	West-Kroeschell	6	5
Paschen, Chris, 1448 Clybourne	Vilter	11.50	10
Pittsfield Bldg., 58 E. Washington (Add'l.)	Carrier-Kroeschell	106	75
Pixley & Ehlers, 68 W. Lake St.	York-West. & Camp.	6.50	6
Pullman Co., 615 E. 108th St.	G-E-Heating Systems	125.50	80
Rapid Roller, 2558 Federal	Curtis-Nat'l Kor.	18	15
Reed Candy Co., 1245 Fletcher St.	York-West. & Camp.	9	7.50
Refrig. & Air Cond. Inst., 2154 W. Lawrence	Fairbanks-Morse	0.75	0.75
Sacramento Club, 2957 W. Madison St.	U. S. Air Cond.	2	0
Seeborg Corp., J. P., 1510 Dayton St.	West-Kroeschell	19	15
Sidell Woodworking, 1922 Halsted St.	Curtis-Nat'l Kor.	2	2
State & Lake Club, 190 N. State St.	Carrier-Air Comfort	12	10
Stone Co., J. H., 4150 W. 42nd Pl.	Carrier	18	15
Teich, Curt, 1733 W. Irving Park Rd.	Carrier-Air Comfort	5.50	5
Union Pacific RR, 1 S. La Salle St.	Kelvinator-M. & M.	11	10
Union Tank Car, 228 N. La Salle St.	Carrier-Baldwin	33	30
United Air Lines, 5940 S. Cicero Ave.	General Electric	32.50	0
United Light & Power, 105 W. Adams St.	U. S. Air Cond.	3	3
U. S. Air Cond., 550 W. Washington St.	U. S. Air Cond.	1.50	0
Weber, H. C., 1049 Argyle	West-Kroeschell	15	15
Wieboldt Co., R. C., 1412 W. Washington	West-Kroeschell	3.50	2.50
Witt Club, 3166 Broadway	Kelvinator-M. & M.	5.25	5

### Offices, Private

Acme Corp., 1132 W. 35th St.	Norge-Sampson	3	3
Burgess Laboratory, 500 W. Huron St.	York-West. & Camp.	3.25	3
Continental Casualty Co., Standard Oil Bldg.	Kelvinator-M. & M.	1.50	1.50
Channon Co., H., 149 N. Wacker Dr.	Servel-Baldwin	1.50	1.50
Jelke, John J., 759 S. Washtenaw Ave.	Carrier-Air Comfort	7.50	7.50
Montgomery Ward, 619 Chicago Ave.	Frigidaire	3.25	3

### Residences

Eppenstein, J. F., 1432 Astor St.	G-E-C. W. Johnson	6	5
Greene, Arthur, 173 E. Lake Shore Dr.	Assembled	12	10
Griffith, Carroll L., 9931 S. Seeley Ave.	Frigidaire	3	3
Hammond, L., 1421 N. State St.	West-Kroeschell	3.25	3
Johnson, David B., 6956 Bennett	G-E-Doherty	2.50	2.50
Kaplan, Manuel, 2511 Jarvis Ave.	Par-Gillice	2	2
Mackinson, R., 10027 S. Damen Ave.	Frigidaire	3	3
Rosset, Mr., 1540 Lake Shore Dr.	Frigidaire	3.25	3

### Restaurants

A Bit of Sweden, 1015 N. Rush St.	Andel-Moffot	12.50	10
Alexander's, 1137 E. 63rd St.	Vilter	15	15
Al's Golden Brown Chicken, 1011 N. Rush	Reliance-Blakaire	10.75	10
Al's Restaurant, 1076 W. 14th Pl.	X-L-Hilger	12	10
Allegretti Grill, 359 N. Wells St.	Carrier-McDon-Tr.	22	20
Anne's Restaurant, 57-59 E. Adams St.	Kelvinator-M. & M.	30	25
Baritz Corp., 4001 N. Sheridan Rd.	General Refrig.	11	10
Belmont Theater Restaurant, 1639 W. Belmont Ave.	York-West. & Camp.	6.50	6
Benton Grill, 165 N. Wabash Ave.	Frick-Midwest	11	11
Beverly Tea Shop, 1716 W. 95th St.	Carrier-Air Comfort	11	10
Blue Ribbon Spa, 80 E. Jackson Blvd.	Kroeschell	0.50	0.50
Capitol Bar, 165 N. State St.	Servel-Baldwin	6.75	6
Central Plaza Hotel, 315 N. Central Ave.	Howe	11	10
Club Miami, 1036 N. State St.	Vilter	17	15
Continental Restaurant, 2135 E. 71st St.	York	18	15
County Cafe, 1901 W. Harrison St.	Lipman-General. Ref.	20	20
DeLuxe Restaurant, 3205 N. Clark St.	Reliance-Blakaire	5.50	5
DeMet's Restaurant, 67 E. Monroe St.	Carrier-Air Comfort	15	15
Dinos Diversey Restaurant, 526 Diversey	Vilter	28.75	25
Doublin Sandwich Shop, 1144 Wilson	Kelvinator-M. & M.	3.25	3
Elliott Open Kitchen, 534 W. Garfield	Assembled	2.50	0
Famous 740 Restaurant, 740 W. Madison	Vilter	11.50	10
Faubel's Restaurant, 5228 S. Lake Park	York-West. & Camp.	22	20
Fort Dearborn Grill, 89 E. Wacker Dr.	Carrier-Air Comfort	10.50	10
Forum Restaurant, 60-66 W. Madison St.	York-West. & Camp.	225	160
Fred Harvey Coffee Shop, Union Station	Mills-Gordon	8	7.50
Gastis Restaurant, 3259 N. Clark St.	Kelvinator-M. & M.	6.50	6
G. F. Restaurant, 2138 S. Michigan Ave.	Reliance-Blakaire	15	15
G & N Restaurant, 4943 N. Sheridan Rd.	Frigidaire-Wendt-Crone	11	10
Goldberg Restaurant, 1259 S. Wabash Ave.	Excel-Hilger	15	15
Gorman's Restaurant, 61 E. Adams St.	Kelvinator-M. & M.	6	6
Grandeur Tap Room, 1051 Granville Ave.	York-West. & Camp.	5.25	5
Greene's Restaurant, 9358 S. Ashland Ave.	Carbondale-Witten.	17	15
Grillette Sandwich Shop, 3914 Broadway	Frigidaire-Famous Oil B.	3.25	3
Hardings, J. P., 21 S. Wabash Ave.	Carrier-Douglas	45	40
Hartman's Grill, 11 E. Adams St.	Vilter	15	15
Hitching Post, The, 2235 E. 71st St.	West-Kroeschell	11.25	8
Hitching Post, The, 2600 N. Clark St.	Lipman-Adv. Heating	16.50	15
Hut, The, 175 W. Washington St.	Frick-Midwest	16.50	15
Ile de France, 101 E. Walton St.	Frigidaire-Gal. Spec.	11	10
Isbells Restaurant, 940 Rush St.	Frigidaire-Wendt-Crone	37.50	30
Jerold's, Inc., 3807 Broadway (Add'l.)	Reliable	3.50	3.50
Jerold's, Inc., 3807 Broadway	Rel. Refr.	1.50	1.50
Landers Grill, 134 S. Wabash Ave.	Reliable-M. & H.	28	25
Lantros, Tom, 547 Rush St.	Assembled	3	3
LaSalle Restaurant, 2007 Irving Pk. Rd.	Carrier-Air Comfort	5.25	5
Lawson Y.M.C.A., 30 W. Chicago Ave.	York-West. & Camp.	25	25
Marquis Restaurant, 3127 Logan Sq.	Lipman-Gen. Refr.	6.50	6
Marquis Restaurant, 2737 N. Clark St.	Lipman-Gen. Refr.	7.50	6
Melrose Grill, 1627 Melrose Ave.	York-West. & Camp.	16.50	15
Miller's Tavern, 23 E. Adams St.	Baker-Burge	7.50	7.50
Mondane, Peter, 327 S. La Salle St.	Kelvinator-M. & M.	5.50	5
Normandie Inn, 1110 Lawrence Ave.	U. S. Air Cond.	0.50	0

(Continued in Columns 1 and 2, Page 15)



**(Chicago 1938 Air-Conditioning Installations (Cont.))****Restaurants (Cont.)**

(Continued from Page 14, Columns 4 and 5)

Name and Address	Installation	Hp.	Tonnage
O'Connell's Restaurant, 538 Diversey.....	Vilter	20	20
Orange Gardens, 1942 W. Irving Park....	G-E-III. Heat.	8.25	7.50
O'Toole's Tick Toc Rest., 178 W. Randolph	Baker-Burge	15	15
Pellegrini's, 181 N. Clark St.....	Reliance-Blakaire	17	15
Powers Restaurant, 710 W. 63rd St.....	Baker-Burge	9	7.50
Powers, Walter, 62 E. Cermak Rd.....	Baker-Burge	11.50	10
Rhodes, Mrs., 1207 N. Dearborn St.....	G-E-III. Heat.	17	15
Roache, Arthur, 559 W. 37th St.....	Fairbanks-Morse	5.75	5
Roosevelt Cafe, 716 W. Roosevelt Rd.....	Frick-Midwest	31	25
Rothchild's Bar, 400 S. State St.....	Frick-Midwest	27	25
Sherman Hotel Bar, 156 N. Clark St.....	Vilter	20	20
Simon, Albert J., 1325 S. Wabash Ave.....	Kelvinator-M. & M.	8.50	7.50
606 Club, 606 S. Wabash Ave.....	Fairbanks-Morse	15	15
"16" Club, 125 N. Pulaski Rd.....	Carrier-Assembled	11.50	10
Stevens Restaurant, 1405 E. 63rd St.....	Carrier-Air Comfort	8.25	7.50
Stoners, 24 N. Dearborn St.....	Vilter	30	25
Tasty Hamburger Shop, 454 W. 63rd St...	U. S. Air Cond.	1.50	0
Terminal Restaurant, 746 S. Dearborn St...	Frigidaire-Kohl.	6	6
Thompson, John R., 1223 S. Halsted St...	Carrier-Air Comfort	10	10
Thompson, John R., 2201 S. Michigan Ave...	West.-Kroeschell	17	15
Thompson, John R., 182 W. Van Buren...	Lipman-Gen. Refr.	22	20
Thompson's Restaurant, 739 W. Madison...	Carrier-Air Comfort	18	15
Tinkham, W. B., 333 North Austin Ave...	Airtemp	3.25	3
Vine Gardens, 616 W. North Ave.....	Curtis-Nat'l Kor.	32	25
Williams Restaurant, 700 S. Wabash Ave...	Frick-Midwest	18	15
Wilclaire Restaurant, 7664 Exchange Ave...	Carbondale-Witten.	18	15
Windsor Restaurant, 840 W. 63rd St.....	Vilter	24	20
Wolkow Restaurant, 118 Cermak Place....	Rel.	28	25

**Stores, Candy**

Andes Candies, 3965 Lincoln Ave.....	Frigidaire-Kohlman	3.25	3
Andes Candies, 3958 W. North Ave.....	Frigidaire-Kohlman	3.25	3
Andes Candies, 2545 N. Kedzie Ave.....	Frigidaire-Kohlman	3.25	3
Andes Candies, 5559 Belmont Ave.....	Frigidaire-Kohlman	3.25	3
Anne's Candies, 3200 N. Cicero Ave.....	Airtemp	5.25	5
Dutch Mill Candy, 33 W. Randolph St....	Airtemp-Mehr.-Han.	2	2
Mrs. Snyder's Candy, 1731 Howard St....	Carrier-Air Comfort	5.50	5
Mrs. Snyder's, 1514 E. 53rd St.....	Carrier-Air Comfort	5.50	5
Mrs. Snyder's, 2030 E. 71st St.....	Carrier-Air Comfort	5.50	5
Mrs. Stevens Candy Co., 138 N. State St...	Frigidaire	3.25	3
Mrs. Stevens Candy Co., 4281 Archer....	Frigidaire-Northtown	3	3
Mrs. Stevens Candy Co., 11 S. Dearborn...	Frigidaire-Northtown	3	3
Maple Leaf Candy, 53 W. Van Buren St...	Vilter	22	20

**Stores, Clothing & Department**

Block Millinery, 6344 S. Halsted St.....	G-E-Dougherty	10	10
Bond Clothing, 3250 Lincoln Ave.....	Lipman-Gen. Refr.	37.50	30
Cohn & Abrams, 337 S. Franklin St.....		3.25	3
Finchley's, 23 E. Jackson Blvd. (Add'l)...	Kelvinator-Witten.	20	20
Hilton, Joseph, 201 S. State St.....	Baker-Burge	17	15
Irma Hat Co., 6360 S. Halsted St.....	Carrier-Adv. Heat.	5.50	5
Korshak, Stanley, 912 N. Michigan Ave...	West.-Kroeschell	9	7.50
Lanathan's, 2752 Milwaukee Ave.....	West.-Kroeschell	3.25	3
Lanathan's, 2356 E. 71st St.....	West.-Kroeschell	3	3
Louis Credit, Wm., 4716 S. Ashland Ave...	Gen. Refrig.	22	20
Madeline Dress Shop, 1502 E. 53rd St....	Carrier-Air Comfort	3.25	3
Madigan Bros., 4030 W. Madison St.....	Carrier-McDon.-Trunk	176.75	125
Marks Credit Clothing, 6409 S. Halsted St.	Gen. Refrig.	22.50	20
Neumode Hosiery, 814½ W. 63rd St.....	Frigidaire-Gall.-Speck	3	3
Peck & Peck, 660 N. Michigan Ave.....	Carrier-Air Comfort	5.50	5
Ribick, Nat., 337 S. Franklin St.....	Kelvinator-Brown	6	6
Rose Dress Shop, 6342 S. Halsted St....	York-West. & Camp.	11.50	10
Sally Frocks, 35 S. State St.....	Carrier-Adv. Heat.	23	20
Task, Sam, 1201 E. 63rd St.....	Brunner-Reger	3.50	3
Spaulding Dept., 3301 Montrose Ave.....	York-West. & Camp.	11	10
Three Sisters, 127 S. State St.....	Carrier-Air Comfort	38	30
Tobias, J. G., 2403 W. Madison St.....	Carrier-Air Comfort	3.25	3
Unique Smart Shop, 6314 N. Western Ave...	Carrier-Air Comfort	5.50	5
Weiss, Art, 337 S. Franklin St.....	Kelvinator-Brown	3.25	3

**Stores, Drug**

Kaplan Pharmacy, 4400 Broadway.....	Gen. Refr.	11	10
Meyer Drugs, 3225 N. Ashland Ave.....	Curtis-Nat'l Kor.	23	20
Norman Drug, 900 E. 47th St.....	Lipman-Gen. Refr.	11.50	10
Portes Drugs, 1057 Argyle.....	West.-Kroeschell	7.50	6
Rosenblum Drug, 2128 E. 71st St.....	Carrier-Air Comfort	5.50	5
Savoy Drugs, 164 E. Ohio St.....	Rel.-Blakaire	5.50	5
Schmid, E. M., 6000 W. North Ave.....	Airtemp	5.25	5
7th & Exchange Drugs, 2634 E. 75th St...	Carrier-Air Comfort	5.50	5
Stineway Drug, 3200 Lawrence Ave.....	Carrier-Air Comfort	11	10
Stineway Drug, 6359 N. Western Ave.....	Gen. Refr.	15	15
Stineway Drug, 4556 N. Clark St.....	Lipman-Gen. Refr.	12	10
Stineway Drug, 1380 E. Hyde Park.....	Carrier-Air Comfort	22	20
Stone Drug, 4553 N. Kedzie Ave.....	Airtemp	3.25	3
Teters, Isadore, 321 W. 63rd St.....	X-L-Hilger	5.50	5
Thomas Drugs, 1428 E. 53rd St.....	Kelvinator-M. & M.	3	3
Uciet Drugs, 4000 W. Washington St....	Carrier-Air Comfort	11.50	10
Walgreen Drugs, 189 N. Wabash Ave.....	Carrier-Assembled	11	10.50
Walgreen Drugs, 7559 N. Clark St.....	Frigidaire-Gal.-Spec.	12	10
Walgreen Drugs, 2160 E. 71st St.....		5.50	5
Walgreen Drugs, 2623 E. 75th St.....		12	10
Walgreen Drugs, 4658 S. Ashland Ave....	Gen. Refr.	11	10

**Stores, Food**

Davidson Bakery, 1135 Granville Ave.....	Airtemp	3.25	3
Davidson Bakery, 1410 Morse Ave.....	Kelvinator-M. & M.	3.25	3
Hofner Bakery, 4754 Lincoln Ave.....	Carrier-Air Comfort	3.25	3
Morgan Grocery Co., 1518 E. 53rd St.....	Carrier-Air Comfort	5	5
Morgan Grocery Co., 4710 S. Dorchester...	Carrier-Air Comfort	5.50	5
Morrow's Nut House, 38 W. Washington...	Rel.-Blakaire	5.50	5
Morrow's Nut House, 163 N. State St....	Airtemp-M. & H.	3	3
Schlosser Bakery, 4052 W. Madison St....	Carrier-Air Comfort	3.25	3

**Stores, Fur**

Bishop, A., 143 N. Wabash Ave.....	Carrier-Air Comfort	5	5
Tausz, Martin, 524 N. Michigan Ave.....	Carrier-Air Comfort	5.25	5
Walzer, H., 174 N. Michigan Ave.....	Curtis-Nat'l Kor.	5.75	5

**Stores, Shoe**

Enna Jettick, 6404½ S. Halsted St.....	Airtemp	5.50	5
Enna Jettick, 24 E. Adams St.....	Airtemp	5.50	5
Feltman & Curme, 1749 Howard St.....	Frigidaire-Gal.-Spec.	3.25	3
General Shoe Co., 6341 S. Halsted St....	Frigidaire-Kohlman	3	3
Joseph's Salon, 2374 E. 71st St.....	Kelvinator-M. & M.	1.50	1.50
Nunn Bush Shoes, 14 S. Dearborn St....	Frigidaire-Gal.-Spec.	3	3
O'Connor & Goldberg, 6348 S. Halsted...	Carrier-Air Comfort	20	20
Reel's Shoes, 137 S. State St.....	West.-Kroeschell	18	15
Regal Shoes, 43 S. Wabash Ave.....	Carrier-Air Comfort	6	5

(Concluded in Columns 4 and 5)

**New 'Airgraph' Permits Direct Readings**

CHICAGO—Known as the "Airgraph," a direct reading type of hygrometer has been placed on the market by Carson Mfg. Co. here.

The new instrument combines the principles of the thermometer and hygrometer, the mechanism working on revolving drums, side by side, in a manner which tells the relation existing between the relative humidity and temperature of room air.

Humidity and temperature are read directly, without the use of charts. Health zones are plotted to enable the user to determine if atmospheric conditions are correct. The unit is mounted in a walnut and maple case.

**Reverse Cycle Installed In Westinghouse Bldg.**

EMERYVILLE, Calif. — Reverse cycle heating and air conditioning has been installed in the new Westinghouse office building here, first system of this type to be placed in service in the San Francisco Bay area.

Designed by Frank Jordan, the system removes heat from the outside air by the action of mechanical refrigeration, sending the heat through ducts to maintain comfort conditions in the entire building. In summer, the cycle is reversed, when the refrigeration machinery is used to remove heat from the inside of the building.

For economy of operation, double glass windows are used throughout the building.

**Stores, Miscellaneous**

Name and Address	Installation	Hp.	Tonnage
Ben Franklin Store, 436 E. 47th St.....	North-Acme	10	10
Bryn Mawr Liquor, 1111 Bryn Mawr Ave..	Carrier-Air Comfort	10.50	10
Gilbert, A. O., 847 W. Jackson Blvd.....	Frick-Midwest	1	0.75
Hyde Park Smoke Shop, 1605 E. 55th St...	Excel-Hilger	5.50	5
Neisner Bros., 4052 W. Madison St.....	Carrier-Adv. Htg.	85	75
Wolf's Jewelry Store, 4102 W. Madison...	Frigidaire-Util. Sales	3.25	3

**Studios**

Dooze, Harry S., 2308 N. Lincoln.....	Fairbanks-Morse-Hanley	3.25	3
Wolk, William, 1945 W. 35th St.....	Ilg-N. W. Heat.	8	7.50
World Broadcasting Sys., 301 E. Erie St...	Carrier-Air Comfort	30	30
Stadler Photographic, 62 E. Lake St.....	G-E-Heating Sys.	10	8

**Theaters (Electric Refrigeration)**

Alex Theater, 3826 W. Madison St.....	Vilter	62	60
Boulevard Theater, 1606 Garfield.....	Carbondale-Witten.	50	50
Clark Theater, 11 N. Clark St.....	York-West. & Camp.	50	50
Coed Theater, 1330 Morse Ave.....	G-E-Ehrlich	25	25
Halffield Theater, 5451 S. Halsted St....	Carbondale-Witten.	52.50	50
Midway Theater, 6250 Cottage Grove Ave...	Carrier-Air Comfort	60	60
Orchestra Hall, 230 S. Michigan Ave....	Vilter-Prentice	230	180
Patio Theater, 6000 Irving Park Rd.....	Carrier-Air Comfort	40	40
Ray Theater, 2638 E. 75th St.....	Carrier-Air Comfort	32	30
Regent Theater, 6828 S. Halsted St....	Carbondale-Witten.	40	40
Woodlawn Theater, 1326 E. 63rd St.....	Carrier-Air Comfort	30	30

**O'Leary Sole Owner Of Miami Electric**

MIAMI, Fla. — Arthur O'Leary, partner in the Miami Electric Co., has purchased the half interest of Cyril Kennedy and will be the sole owner of the company in the future.

**Leases St. Louis Building**

ST. LOUIS—The General Electric Appliance Co., headed by N. C. Shannon, has leased ground floor quarters in a building at Gravois Ave. and Bates St. here.

**New Catalog Explains Unit Heater Work**

TRENTON, N. J.—A new eight-page catalog on the Kramer line of unit heaters has just been issued by Trenton Auto Radiator Works, manufacturer of Kramer products.

Replete with photographs, descriptive material, diagrams showing suggested locations for the units, and methods of hanging and wiring them, and all sorts of tables, charts, and statistical compilations, the catalog explains and illustrates how to estimate the heating requirements.

Ready for distribution 1939 CATALOG



TYPICAL 2-CYLINDER AIR COOLED FRACTIONAL H. P. M & E CONDENSING UNIT

One of 60 COMBINATIONS of complete units—air and water cooled—from ¼ H. P. to 25 H. P. for REFRIGERATION and AIR CONDITIONING

Again—MANY MAJOR REFINEMENTS that add to operating efficiency and to ease of servicing...

CONSISTENTLY, for the past 14 years, Merchant & Evans Co. has been a leader in introducing practical and needed refinements on compression equipment.

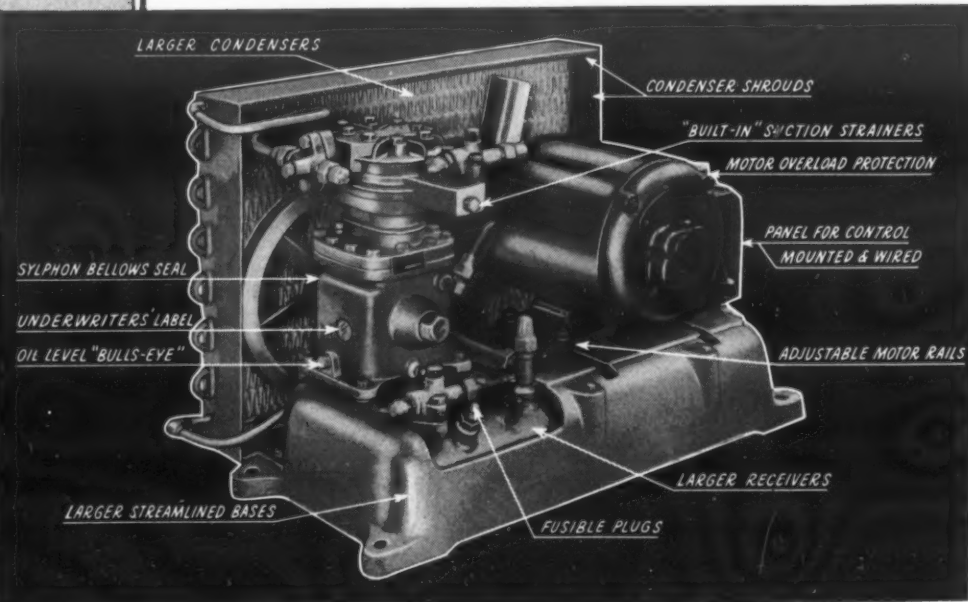
AGAIN, for the current year, M&E steps ahead with several new features that will give the user greater economy and efficiency and at the same time lessen the problems of the service man.

UNCHANGED, however, is the traditional M&E policy of controlled, quality production which gives to each M & E compressor 'custom-made' precision of machining and fitting and which includes a 24-hour run-in before shipping.

**A MESSAGE TO DISTRIBUTORS**

Increased manufacturing facilities enable us to entertain more widespread distribution. We should like to hear from responsible jobbers in territories in which we are not represented. M&E policy, prices and reputation, plus the present comprehensive line, offer one of the best business-building and money-making opportunities of the day.

**MERCHANT & EVANS CO.**  
PHILADELPHIA, PA. • Plant: LANCASTER, PA.





## Wisconsin Utility Puts Reliance on Dealers

(Concluded from Page 1, Column 2)

In its 1939 advertising, the utility will bear down stronger than ever on the "see your electrical dealer" theme, the dealers were told.

Sales of electric water heaters also will be largely confined to dealer channels this year, it was announced, a change from the 1938 policy on this appliance. Strong effort also will be made to increase public acceptance of this appliance.

More than 65% of last year's electric range sales were made by dealers, it was announced, and the utility feels that this appliance has definitely reached the "public acceptance" stage in Milwaukee, with all parties viewing 1939 as a year of real volume possibilities.

Last year's "gift of the month" promotion, in which prizes were awarded monthly for the best last lines of limericks on the appliance being featured during the period, brought 41,400 persons into retail stores for entry blanks, it was announced.

## 6 Distributing Firms Join Leonard Ranks

(Concluded from Page 1, Column 3)

part of Alabama for Leonard. E. H. Abernathy is manager of this company, which operates both as a wholesale and a retail organization.

Page-Williamson, Inc., Charlotte, N. C., will cover the western part of North Carolina and all of South Carolina. President of the company is W. H. Williamson, Jr.

Enger Supply Co., Minneapolis, is new distributor in most of Minnesota and also western Wisconsin. Head of the company is I. J. Enger.

Morris Distributing Co., Binghamton, N. Y., will be distributor in southern central New York and northern Pennsylvania. M. Horowitz is president of the organization.

## Hottel Heads Fineburg's Commercial Dept.

TRENTON, N. J.—Harvey Hottel has been named head of the commercial refrigeration department of Fineburg's, new distributor for General Refrigeration Co. equipment.

## The Results You Need— in a Locker Plant Installation

**R**EMPE COILS and UNIT Coolers have a well-earned reputation for correct results in a locker plant. That's not only because our equipment has been scientifically developed for the special conditions that apply to locker plants. It's also the result of the Rempe data, experienced advice and authoritative installation counsel we furnish with it.

There are specially developed Rempe coils for the chill, sharp freeze and storage rooms. There are Rempe Units that at temperatures of 34 to 38 degrees show an 84 degree relative humidity in meat storage rooms, overcoming the costly waste of dried-out meats. What are your locker plant problems?



Coils and Unit Coolers for Locker Plants

## Ask Rempe Rempe Knows!

REMPE CO., 340 N. Sacramento Blvd., CHICAGO

## Fourth-Quarter Sales Of Vacuum Cleaners Close To '37 Mark

CLEVELAND—Upped by a final spurt which pushed November and December volume well ahead of that for the same months in 1937, vacuum cleaner sales during the last quarter of last year virtually tied the sales mark set during the final quarter of 1937, biggest year in the industry's history.

Fourth-quarter sales last year totaled 365,464 units, compared to the 367,900 cleaners sold during the closing three months of 1937, reports C. G. Frantz, executive secretary of the Vacuum Cleaner Manufacturers' Association.

Sales during December, 1938, numbered 126,153, a 7% increase over the 117,810 unit sales chalked up in the last month of 1937. November sales reached 119,506, just beating out the mark of 118,780 established in 1937.

Despite this fine showing in the final quarter and the fact that the industry's dollar volume for the year exceeded \$62,500,000, total sales for 1938 lagged 23% behind the record-breaking volume of 1937, Mr. Frantz declared.

## Universal Cooler Jan. Household Sales Up

DETROIT—Sales of household electric refrigerators by Universal Cooler Corp. for January show an increase of more than double the volume of that month a year ago, says F. S. McNeal, president.

Mr. McNeal attributes this business increase to both the improved business conditions in the retail appliance field, and increased trade acceptance being accorded the company's 1939 refrigerator models.

## Wyoming Dealership Changes Hands

CASPER, Wyo.—John Peach, Norman Walden, F. L. Brown, and O. N. Bowron announce that they have purchased the Electric & Gas Appliance Co. Mr. Bowron, who assumes the presidency of the new firm, has held the office of vice president and manager of the Electric & Gas Appliance since it was formed two years ago.

## Distributors Agree To N. Y. Campaign

(Concluded from Page 1, Column 1)

paing, Mr. Jeffe said in his announcement, will be an "old ice-box round-up," with the drive being slanted at retirement of units of this type rather than any extensive replacement of mechanical refrigerators.

He estimated that sales of automatic refrigerators amounting to \$10,000,000 would be made during the campaign period.

Listed as participants in the drive now are Crosley, Hotpoint, Electrolux, Frigidaire, General Electric, Gibson, Kelvinator, Leonard, Norge, Spanton, Stewart-Warner, Universal, and Westinghouse.

"In the campaign," said the Edison vice president, "through cooperation of manufacturers, distributors, dealers, and the utility companies, an allowance will be made toward the replacement of every old ice-box replaced by a 1939 automatic refrigerator."

"In addition to the trade-in feature, during the period of the campaign financing terms have been arranged so that a customer can purchase a refrigerator of 3, 4, 5, or 6 cu. ft. at the same monthly payment. Established list prices, participation in the trade-in allowance, and such matters, have been negotiated by manufacturers and distributors with their respective dealers."

Full details of the campaign will be given to cooperating dealers at a dinner meeting March 14 at the Waldorf-Astoria hotel, at which Floyd L. Carlisle, Consolidated Edison's board chairman, will speak.

Mr. Jeffe said that the utility companies would spend approximately \$350,000 in advertising over the period of the drive.

## Radio & Ranges Gained In Northern Calif.

(Concluded from Page 1, Column 1)

over comparative 1937 totals, with 59,361 units reported in 1938 as against 54,457 in the preceding 12 months. Electric washer sales were down, last year's total being 7,088 units as compared with 7,592 in 1937.

Ironer sales also dropped, with 1,510 units in 1938 as against 1,883 in the previous year.

Sale of refrigerating compressors for apartment house installation also dropped during the year, the 1938 mark standing at 85 units as compared with 122 in 1937.

Distinct improvement in sales was noted in all departments during December, with the exception of household and apartment house refrigeration.

December washer sales amounted to 687 units, against 605 in December, 1937, and ironer sales rose to 221 units as compared with a 1937 total of 177.

Radio sales totaled 11,449 units during the month, as against a 1937 total of 9,263 units, and vacuum cleaner sales amounted to 1,574 units.

Sales of household refrigerators dropped to 895 units, as against a 1937 total of 1,092, while sales of compressors to apartment houses totaled five units, compared with 11 in the same month a year ago.



## SERVEL

COMMERCIAL REFRIGERATION  
AND AIR CONDITIONING

Whether you need 6 machines or 6,000, Servel's engineers and factory staff will give you prompt, expert service. Write for details to Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Indiana

## Charley D'Olive Tells Boston About the New Crosley



Charles R. D'Olive, Crosley vice president, and Arthur Marquardt of Hunt-Marquardt, pose with a new Crosley 8-foot deluxe model at the distributor's meeting, which was attended by approximately 400 dealers.

## 'Packaged' Units Lead Dec. Commercial Gain

(Concluded from Page 1, Column 4)

bottle-type units, against respective totals of 503 and 30 units during the previous December.

Shipments of bottled beverage coolers also were up, with a total of 876 sales reported as compared with 506 in December, 1937.

Self-contained air conditioner shipments amounted to 267 units during the month, against a "year-before" total of 101 units.

Shipments of commercial condensing units were under comparative 1937 marks for the month, but not distressingly so, according to the report. Last December's total was 4,445 units, against 4,900 in the month of 1937.

As far as the year's shipments were concerned, self-contained air conditioners were the only products to beat out 1937 totals. Last year's sales in this department amounted to 14,476 units, against a 1937 total of 10,354.

Ice cream cabinet shipments totaled 28,828 units, as compared with 33,035 in 1937; and bottled beverage cooler shipments reached 36,463 units, against a total of 38,622 during the previous 12 months.

## Kitchen Displays Help 16 Firms Make 58% of Range Sales

MINNEAPOLIS—Convincing testimony as to the value of all-electric kitchen displays is the fact that the 16 local appliance dealers (roughly 20% of the city's total number of retail appliance outlets) who maintain such displays permanently on their sales floors have, in the past four years, sold 58% of all the electric ranges and water heaters installed in Minneapolis.

Scaling this down to a per capita figure shows that each of these 16 dealers has sold approximately six times as many ranges and water heaters as the remaining dealers who have done without all-electric kitchen displays.

## Dishwashers Considered For National Drive

(Concluded from Page 1, Column 5)

of a national cooperative advertising drive, as a result of a national preliminary survey and market study of this appliance now being made for the recently formed Electric Dishwasher and Sink Section of the association.

In the event a national advertising program is approved by Nema, it will in all probability be similar in nature to those prepared for electric refrigerators, ranges, and roasters, it was understood.

Encouraging prospects for dishwasher sales were seen as a result of 1938 figures, which showed that sales of this appliance held up while those of most other major appliances fell far off from 1937 totals. This is thought to point to a definite interest in this addition to the work section of the modern kitchen.

## Wimberly & Thomas Named Kelvinator Distributor

BIRMINGHAM, Ala.—Wimberly & Thomas has expanded its electrical appliance department and has taken on distribution of Kelvinator household and commercial refrigeration equipment in the Alabama and western Florida territory.

W. A. Thompson is manager of the department, which formerly was Fairbanks-Morse distributor. Other lines carried by the department include Fada radios, Universal small appliances, and Emerson fans.

Commercial refrigeration sales will be directed by H. H. Swink, formerly of Alabama & Tennessee Power Co. New field men are B. L. Simpson, formerly with Alabama Power Co., and Emmett Webster, who has been with Wimberly & Thomas for 13 years.

L. R. Walker is manager of the service department, which will offer a complete service to dealers.

Preview of new Kelvinator appliances for territorial dealers recently was conducted by the company, with J. B. Johnson and Montgomery Haynes, district managers for Alabama and Mississippi, respectively, as chief speakers.

**BUSH FINNED COILS**  
FOR  
COOLING—HEATING AND  
AIR CONDITIONING  
BUSH MANUFACTURING CO.  
HARTFORD, CONN.



## Foreign News

### South American Market Best Now, Declares Exporter on Return From 3-Continent Trip

As export manager for Tecumseh Products Co. and Harold L. Schaefer, Inc., Ernest C. Burgin gets around and meets people all over the world.

And people from other parts of the world come to meet him when they are over here. His office is a "Grand Hotel" for foreign business men on tour.

At the next meeting of the Detroit section of the American Society of Refrigerating Engineers, Mr. Burgin may show several reels of colored motion pictures which he took on his 10-months' world tour. The meeting will be held Tuesday evening, Feb. 21, at the Lee Plaza hotel.

By Alfred Jones

DETROIT—Vivid remembrances of a blackout in Zurich, Switzerland on the eve of Hitler's threatened invasion of Czechoslovakia stand out boldly in the mind of Ernest C. Burgin as he relives his recent 10 months' world tour.

He arrived in Zurich late in the evening, and the whole city was engulfed in blackness.

Mr. Burgin managed to catch the arm of a Zurich citizen and asked him to act as guide to the hotel. The man agreed, said he was very familiar with the city, and was sure he would have little difficulty in penetrating the darkness to reach the hotel.

#### PREVIEW OF NEXT WAR?

They plunged into the inky gloom and felt their way cautiously forward. Dim lanterns came close and then were swallowed up in the night. At long last they reached the hotel, not more than a block away, and Mr. Burgin's commandeered guide gladly released his charge.

This eerie experience is one of Mr. Burgin's most vivid recollections of his pleasurable-business trip which took him from New York to South America, across to South Africa, up the east coast of the Dark Continent to Egypt, over into Italy, around Europe, up to England, and back home again.

Mr. Burgin maintains his office here in Detroit, but invariably it is just a place to come back to so that he may leave it again.

As vice president of the Foraco Corp. and export manager for both Tecumseh Products Co., maker of "Chieftain" refrigeration compressors and condensers, and Harold L. Schaefer, Inc., Minneapolis manufacturer of commercial refrigerators, Mr. Burgin is kept on the go most of the time.

"In fact," he explains, "when I left on my world trip last February I had been back from England only a very short time."

Mr. Burgin expressed his opinion to the effect that the public acceptance of refrigeration and the grow-

ing appreciation and value of air conditioning indicate that in the very near future this industry will emulate a popular brand of paint and "cover the earth."

"If there is no war," Mr. Burgin declared, "this year should be an excellent one for refrigeration in Europe, with the possible exception of France."

"In France the franc is very low, its present exchange value being about 2.6 cents, and general economic conditions accordingly are so unfavorable that the refrigeration business cannot make much headway."

Mr. Burgin pointed out that his remarks concern only those European countries which he visited, namely Italy, Switzerland, France, Belgium, Netherlands, and England.

#### FRANCE IS UPSET

"When I called on the Tecumseh representative in France," Mr. Burgin went on, "I found him in uniform ready for active service. Naturally, under such conditions business could not improve, but Tecumseh sales managed to hold their own as compared with 1937."

"There is no indication at present of stabilization of the monetary system nor of a business increase in France."

Belgium is in a much better position, although the franc here also has lost value, dropping to around 17 cents. Business increased during 1938 over 1937.

"In the Netherlands, sales for 1938 kept even with those of 1937."

"We sold more than 6,000 Tecumseh units to English firms during 1938, which is the highest year's total sales there yet. My fourth year as Tecumseh agent is just starting."

"Air conditioning is becoming more popular in Europe, both in small-room units and large space conditioners. A portable air-conditioning unit listed wholesale at about \$100 should be a good seller."

"It is remarkable the nice ice cream cabinets that are being made, and the well-designed refrigerators."

To go back to the first leg of Mr.

### Has Big Territory



ERNEST C. BURGIN

Burgin's journey, he sailed from New York to Rio de Janeiro, and made a thorough circuit of Brazil, Uruguay, Argentina, and Chile before returning to Rio.

In Brazil, he says, money circulates quite freely, and general living conditions are vastly improved. Consequently, a business increase is expected.

The same holds true for Uruguay and Argentina, but in Chile, although the country is quite modern and wealthy, there are too many handicaps for refrigeration to advance very rapidly. Principal obstacles are import duties and low money rate.

"Argentina is much better off than

Brazil," said Mr. Burgin, "because of buoyant economic prosperity."

#### ARGENTINE CABINETS

"By far the largest refrigerator manufacturing company in Argentina is the firm popularly called 'Catita,' and they make really good-looking units. 'Catita' has a large number of employees working in a huge, modern factory, and producing cabinets for General Electric and Kelvinator."

"Another large Argentine manufacturer of refrigerators is S. I. A. M., Di Tella Ltda."

From Rio to Capetown, South Africa, Mr. Burgin voyaged aboard the 1,800-ton steamer "Anatolia."

"The passage took 32 days," he relates, "and it was one of the most enjoyable trips I ever have taken. The captain and first officer were 'swell guys' and saw to it that I was having a good time all the time."

"South Africa was not quite as prosperous in 1938 as it was in 1937, due to a decline in gold mining and resultant economic conditions. Since the depression has lifted slightly, South Africa no longer is building up gold reserves."

#### THE SOUTH AFRICA MARKET

"South Africa is a key point for refrigeration. There is a high standard of living, money is free-flowing, and public acceptance is growing."

"There is a particularly good market for commercial refrigeration in theaters, hotels, restaurants, and similar places."

"The household market probably will not be quite so good as the commercial, but the import conditions are favorable since there are no money restrictions."

"South Africa has a white popula-

tion of about two and a half million, forming a comparatively small market for household refrigerators. At present, this market is supplied almost entirely by the United States, in preference to British refrigerators."

"The American makes are more popular because of their lower price. British units are efficient and attractively made, but are high-priced."

"All up the east coast of Africa there is practically no refrigeration market, although the climate is suitable. Population is composed of a comparative handful of white people and all the rest various shades of black."

#### 'INTERNATIONALIST'

As an internationalist, Mr. Burgin has a "log" that will compare favorably with anyone's. He was born in Mendoza, Argentina, a beautiful city 'way over near the Chilean border. His father is the head of a large wine concern, wine being one of Mendoza's principal products.

In fact, Mr. Burgin states, they make 3,500,000 barrels of wine a year there—55 gallons to the barrel. Over the gateway to Mendoza is this greeting: "Welcome to Mendoza, the land of sunshine and good wine."

As a boy, Mr. Burgin was sent to Switzerland to attend school, and when the war broke out he was brought back home. Later, he studied foreign trade at the University of Detroit, concentrating on the study of the English language.

His first job in the export field was as salesman for his father's winery, and his territory covered Uruguay, Paraguay, and Bolivia.

After two years' experience, he established his own office in Detroit, and Detroit has been his headquarters for the past 14 years.

## Copeland

DEPENDABLE <sup>Electric</sup> Refrigeration

"Our advertisements have appeared in every issue of Air Conditioning & Refrigeration News for more than 5 years. We have a very clear cut record of results proving that the News has played an important part in the progress and success of Copeland!"

-- Harry E. Thompson, Pres., Copeland Refrigeration Corp.

It is not always easy for the advertiser to check the "results" of his advertising. There are too many intangibles that cannot be measured with a yardstick.

Significant, however, is the fact that so many advertisers in the NEWS today started their schedules years ago and have continued regularly ever since.

Significant is the fact that many advertisers in the NEWS renew their advertising schedules by merely being reminded that their old contract has expired.

Air Conditioning & Refrigeration News  
"The Newspaper of the Industry"

## Checked again, again, and again!

Ansul laboratory technicians check Ansul products again and again through the steps of production. The individual analysis tag on every Ansul cylinder is Ansul's certificate of merit—your proof of Ansul quality.

There is an Ansul Jobber near you

ANSUL CHEMICAL COMPANY  
MARINETTE, WISCONSIN

ANSUL SULPHUR DIOXIDE  
METHYL CHLORIDE





## Commercial Service

### Two Cold Controls & Two Solenoid Valves Used In Late Russ Systems

**Editor's Note:** Construction and operation of the soda fountain system introduced in 1935 and 1936 by Russ, and service procedure on this type of system, is described in this article, a continuation of the series by Arch Black and Dean Seitz on the servicing of soda fountains, ice cream cabinets, and counter-type ice cream freezers which is appearing regularly in the News.

By Arch Black and Dean C. Seitz

In 1935 the Russ Soda Fountain Co. introduced a line of soda fountains completely refrigerated by direct expansion coils and controlled by means of solenoid valves and cold controls. Fig. 1 illustrates the refrigeration hook-up of the 1935 Russ fountain.

Fig. 2 illustrates the wiring diagram of the two cold controls, the two solenoid valves, and the automatic electric light actuated by opening the lid of the bottle storage compartment.

This model of soda fountain has a 50-50 alcohol-water brine in the ice

Russ soda fountains located the solenoid valves on the outside of the creamer unit.

Due to the great similarity of the refrigeration hook-up of both the 1935 and 1936 models, only the 1936 model will be discussed in detail. A clear understanding of the operation and service on the 1936 solenoid control fountain should enable the service engineer to solve any problems on the 1935 model.

Fig. 3 illustrates the complete refrigeration hook-up of a 1936 Russ soda fountain. Fig. 4 shows the end view of the creamer unit with the

exterior connection on the outside of the creamer unit for the suction lines is a  $\frac{1}{8}$ -inch fitting and for the liquid line a  $\frac{3}{8}$ -inch fitting.

#### Ice Cream Refrigeration Circuit For 1936 Fountain

The ice cream section of the soda fountain is refrigerated by means of a coil of  $\frac{1}{8}$ -inch copper tubing, wrapped around and soldered to the metal lining of the ice cream jacket. This coil is embedded in a solidified asphalt emulsion. Please note that in 1935 this same coil was immersed in an alcohol-water brine solution. Fig. 3 illustrates the method used in wrapping the ice cream expansion coil.

By following the wrapping of the expansion coil (Fig. 3) it will be seen that the expansion tubing enters the ice cream jacket approximately 8 inches from the top of the tank. The coil completely encircles the top section of the ice cream jacket, extending up to the top of this compartment. From this point the coil drops to the bottom of the extreme left-hand end wall and is then coiled up this wall to within 8 inches of the top. At this point the coil again drops to the bottom and is wrapped up the rear wall to within 8 inches of the top, where the coil leaves the tank and is joined to the suction line.

Because of this method of wrapping the ice cream jacket refrigeration coil, different temperatures can be maintained in various portions of the ice cream compartment. These models of soda fountains are equipped as standard with rolling trays known by the name "Trayveyor." These "trayveyors" are illustrated in the phantom view of Fig. 5.

If a customer uses the entire bottom section of the ice cream storage compartment for his packaged ice cream and keeps the 2½-gallon cans of dipping ice cream in the "trayveyors," he will wish a colder temperature on the bottom of his ice cream compartment than on the top. This may be accomplished by adjusting the expansion valve to supply refrigerant to the entire refrigeration coil wrapped around the ice cream storage compartment.

On the other hand if a customer wishes to use 5-gallon cans of dipping ice cream and places his packaged merchandise in the extreme left-hand end compartment, he will need uniform temperatures from top to bottom on the right-hand side of the compartment and a slightly colder temperature on the left-hand side for his packaged goods.

Referring to the wrapping of the coil again, it will be seen that if that portion of the coil located on the bottom of the rear wall is not supplied with liquid refrigerant, a uniform temperature will be obtained on the right-hand side of the ice cream storage tank, and a colder temperature on the left-hand end, due to the additional coil on that end. In this manner, by flooding or starving the expansion valve, variations in the temperature distribution throughout the ice cream storage compartment may be obtained.

#### Wiring Diagram For a 1935 Russ Fountain

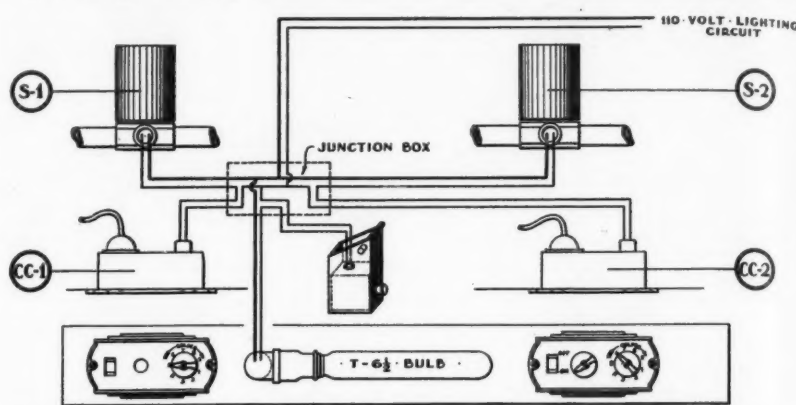


Fig. 2—Wiring diagram of the two cold controls, the two solenoid valves, and the automatic electric light in the 1935 Russ fountain: (S1) ice cream solenoid valve; (CC1) ice cream cold control; (S2) water bath solenoid valve; (CC2) water bath cold control.

#### Hook-Up of the 1936 Russ System

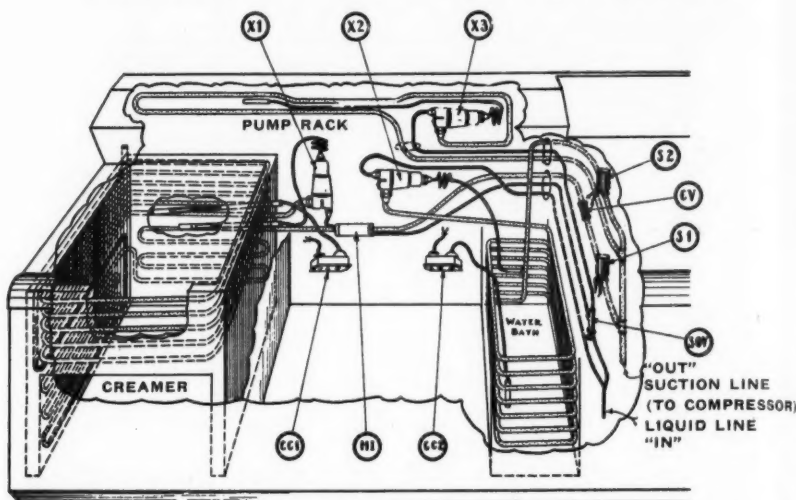


Fig. 3—Refrigeration hook-up of the 1936 Russ fountain. Explanatory material will be found in the text under the heading "Tracing the Refrigerant Circuit."

#### Tracing the Refrigerant Circuit

Starting at the inlet liquid line connection, shown on the phantom view of Fig. 3, the liquid refrigerant first passes through the  $\frac{1}{4}$ -inch liquid line into the heat interchanger (HI), and then to the expansion valve (X1). From this thermostatic expansion valve the refrigerant passes into the ice cream refrigeration coils described above.

The suction line to this coil enters the heat interchanger (HI). From the heat interchanger, the suction line passes out of the creamer unit and can be traced on both Figs. 3 and 4. It first passes through the check valve (CV), then the solenoid valve (S1), and finally to the outlet connection leading to the condensing unit.

It should be particularly noted that the bulb of the thermostatic expansion valve (X1) is inserted in a copper well soldered to the ice cream refrigeration expansion coil at the point where this coil leaves the ice cream jacket. A small rubber stopper is inserted around the capillary tubing where this tube enters the bulb well. The purpose of the stopper is to prevent formation of condensation and ice inside the well. The well should be filled with light refrigeration oil and the stopper then inserted.

The ice cream cold control (CC1) shown in Fig. 3 is an auxiliary electrical control which in turn operates the solenoid valve (S1). The thermal bulb of the cold control (CC1) is located in a copper well soldered to the metal lining of the ice cream jacket. The purpose of the cold control bulb is to measure the temperature of the ice cream compartment and transmit this temperature to the solenoid valve. If the temperature is too high, the solenoid valve will open, permitting refrigeration to take place. If the temperature is correct, the solenoid valve will remain closed and no refrigeration will take place. The well in which the ice cream cold

control bulb is located must likewise be filled with a light refrigeration oil and then closed with a small rubber stopper.

#### Operation of Ice Cream Refrigeration Circuit

As an example of the operation of the ice cream refrigeration circuit, assume that the condensing unit is not in operation. The liquid refrigerant standing in the refrigeration coil of the ice cream jacket is slowly evaporating due to the heat entering from the room through the insulation. This heat finally raises the temperature of the thermal bulb of the cold control. As the temperature of this bulb increases, more and more pressure is exerted in the power element of the control.

Finally, sufficient pressure is exerted by the power element to make an electrical contact within the cold control, permitting the current to flow through both the cold control and the solenoid valves. The current passing through the solenoid valve magnetizes it, thereby opening it. The pressure of the evaporating refrigerant in the ice cream coil then passes to the low-pressure switch on the condensing unit causing it to make contact and start the motor. As the condensing unit runs, moving the evaporated gas and lowering the pressure in the ice cream refrigeration coil, the thermostatic expansion valve (X1) opens, allowing more refrigerant to enter the coil.

This process repeats until the thermal bulb of the cold control is again refrigerated to the desired temperature. At this point the pressure in the power element of the ice cream cold control has been reduced and is not sufficient to keep the electrical switch closed. As a result the electric circuit is broken and the solenoid valve is demagnetized, closing the suction line. The condensing

(Concluded on Page 19, Column 1)

#### Details of the 1935 Russ System

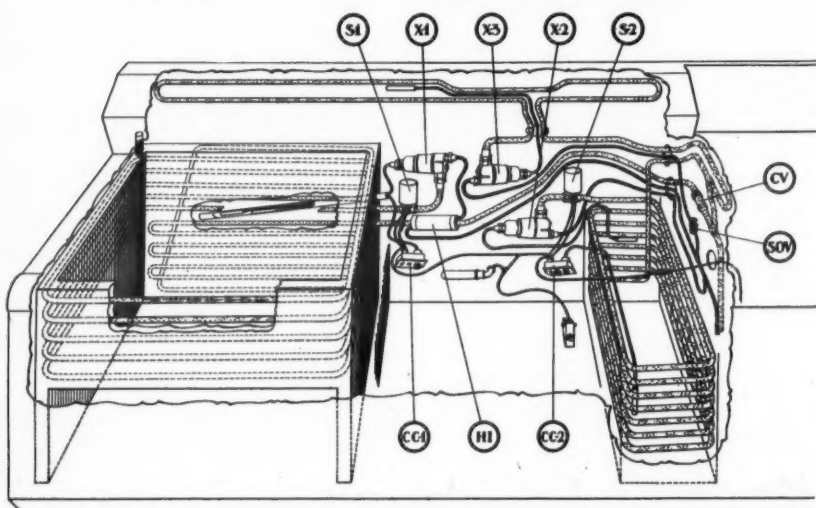


Fig. 1—Refrigeration hook-up of the 1935 Russ fountain: (S1) ice cream solenoid valve; (S2) water bath solenoid valve; (X1) ice cream thermostatic expansion valve; (X2) water bath thermostatic expansion valve; (X3) jar enclosure thermostatic expansion valve; (CV) check valve; (CC1) ice cream cold control; (CC2) water bath cold control; (HI) heat interchanger; (SOV) shut-off valve.

cream tank. It also will be noticed from Fig. 1 that the solenoid valves were installed in the low-pressure evaporator coil immediately after the thermostatic expansion valve.

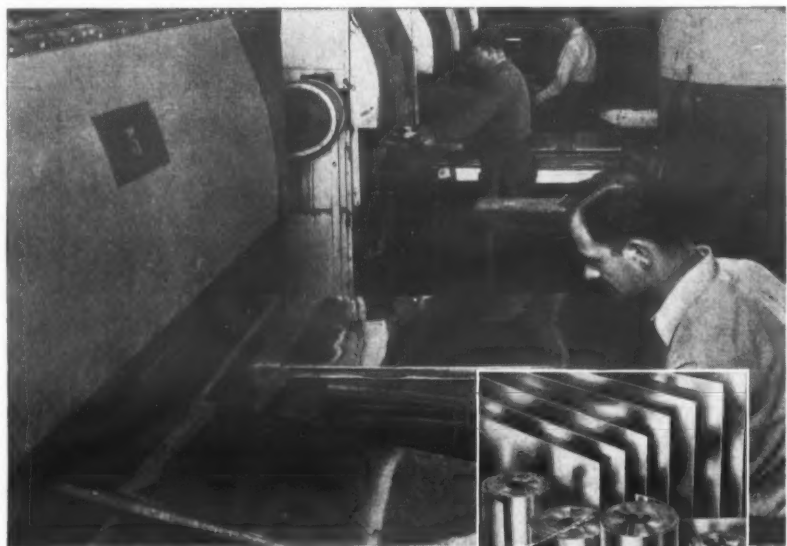
The three expansion valves, the two solenoid valves, and the two cold controls were all installed in a small compartment found at the rear of the bottle storage section. The space available for a service man to work was extremely cramped and for this reason the 1936 model of

solenoid valves (S-1 and H-2) mounted in position. The entire refrigeration hook-up as shown in Fig. 3 consists of three separate refrigeration circuits, each having its own thermostatic expansion valve.

All three suction lines from the separate systems are teed together on the outside of the creamer unit, and brought to a common connection labelled "Out" (Fig. 3). Likewise, the three inlet lines are brought to a common inlet marked "In." The

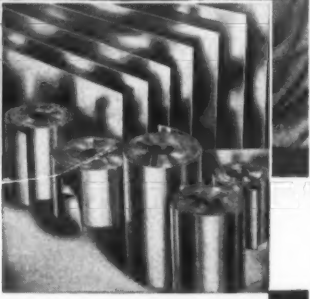
## Make HUSSEY YOUR HEADQUARTERS FOR COPPER IN EVERY COMMERCIAL FORM

Rolled and finished in one of the finest equipped rolling mills in the United States from Pure Lake Copper, Hussey is the ideal copper specification for all air conditioning installations where corrosion-resistance, permanence and ease of fabrication are important factors. It will pay you to investigate the convenience and advantages of dealing direct with your Hussey Warehouse or District office.



See the Educational Exhibit of Copper and Brass Industry, Metals Building at the World's Fair.

C. G. HUSSEY & COMPANY  
(Division of Copper Range Co.)  
Rolling Mills & General Offices: Pittsburgh, Pa.  
Warehouse Stocks in the Principal Cities



Hussey Pure Lake Copper Sheets, Rolls and Tubing for every corrosion-resistant application including Air Washers, Blowers, Coils, Ducts, etc.

Copper HUSSEY Brass

KRAMER

FREEZING OVEN  
Successor to the  
Pipe Coil for Low  
Temperatures  
(below 32°)

Defrosts  
in 20 Minutes



KRAMER TRENTON AUTO RADIATOR WORKS TRENTON, N. J.



## How the 1935 Russ Fountain Looks 'In Action'

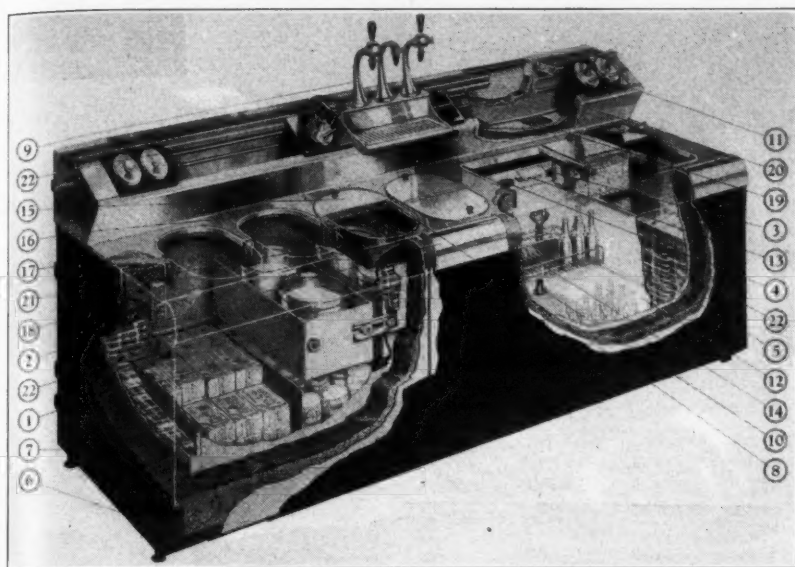


Fig. 5—Cutaway photograph of the 1935 Russ fountain, showing the "trayveyor" and other parts. (1) Trayveyor; (2) front edge; (3) water bath cold control; (4) ice cream cold control; (5) water cooler; (6) frame; (7) cork insulation; (8) raised edge; (9) draft arm; (10) water sealed trap;

(11) syrup pump; (12) white enamel lining; (13) electric light; (14) sliding shelf; (15) insulated cover; (16) stainless steel top; (17) stainless steel under top; (18) steel bar reinforcement; (19) syrup jar enclosure drain; (20) jar enclosure coil; (21) breaker ring; (22) refrigeration coils.

## How Controls Work In Russ Systems

(Concluded from Page 18, Column 5) unit may continue to operate on one of the other refrigeration circuits, but no further refrigeration will be obtained by the ice cream compartment until its thermal bulb again warms up, and the entire operation is repeated.

From the above description, it is apparent that refrigeration for the ice cream section is controlled independently from the other circuits multiplex with it, since it receives refrigeration only when the solenoid valve (S1) is open, and receives none when the valve is closed.

## Refrigeration Circuit For the Water Bath

The water bath is refrigerated in exactly the same manner as described above for the ice cream compartment. A coil of 5/8-inch tubing is wrapped completely around the water bath from top to bottom. Starting at the inlet liquid line, the liquid refrigerant passes through the 1/4-inch liquid line to the thermostatic expansion valve (X2). From this valve the refrigerant passes through the expansion coil of 5/8-inch tubing

to touch the refrigeration coil, but is held in position approximately 2 inches under the top surface of the water and approximately 1/2 inch from the refrigeration coil itself. In this position the thermal bulb of the water bath cold control (CC2) measures the temperature of the ice surrounding the bulb.

If sufficient ice surrounds the bulb, the cold control electric switch breaks the electric circuit, permitting the solenoid valve to close, thereby preventing any further refrigeration from taking place in the water bath cooling compartment.

As quickly as some of the ice is melted, permitting the cold control (CC2) to warm up slightly, a pressure is exerted by the power element of the cold control, closing the electric circuit. The solenoid valve immediately becomes magnetized and lifts, allowing refrigeration to take place in the water cooling section. This process repeats whenever the temperature of the thermal bulb of the water bath cold control warms up sufficiently to close the electric switch of the cold control.

## Jar Enclosure Refrigeration Circuit

Referring again to Fig. 3, it seems that the jar enclosure refrigeration circuit consists of a loop of copper tubing running the entire length of the jar enclosure compartment. By tracing the inlet liquid line, it is found that the liquid refrigerant enters the shut-off valve (SOV) and passes through the 1/4-inch liquid line to the expansion valve (X3). From the thermostatic expansion valve the tinne copper refrigeration coil runs through the jar enclosure and passes outside the unit where it is tied into the other suction line.

The bulb of the jar enclosure thermostatic expansion valve (X3) is clamped at a point approximately half-way through the length of the jar enclosure coil. It will be found necessary in operation to throttle or starve this expansion valve to a great extent in order to prevent the refrigerant from frosting back to the suction line. At a later point in this series of articles the settings of all three expansion valves will be given in greater detail.

## Larkin Industrial-Type Coolers Designed To Fit the Application

BALTIMORE—Two types of industrial water coolers and a rapid liquid cooler are now being manufactured by Larkin Coils, Inc. Water coolers are of the direct-expansion type and circulator type, and the liquid cooler is for direct water cooling and indirect beverage cooling applications.

Direct expansion cooler is designed for bottling plants, bakeries, and similar applications. It is said to be of compact design in order to be adaptable where space is at a minimum. Cabinet is finished in stainless steel. Condenser operates only while bottling operation is carried on, effecting a saving in amount of condenser water and in current cost.

This cooler is said to make possible the instantaneous control of water temperatures, resulting in the elimination of temperature fluctuation and in the control of the gas which affects the quality of the beverage. Outlet water temperatures, it is said, can be controlled to within 1° plus or minus, with the outlet water as low as 36°, or may be controlled at a temperature anywhere between 36° and 45°, permitting an increase in temperature where lower volumes of gas are required.

Stainless steel storage tank used permits daily cleaning. Tank contains 15, 30, or 55 gallons, making negligible the loss of cold water through daily cleaning. Tanks are built into an insulated cabinet as a part of the cooler, and are furnished in capacities according to cooler capacity. They are equipped with air-tight, dust-proof lids to permit cleaning and flushing.

Liquid cooler, known as the "Icy Rapids," is of all-metal construction with exterior in baked Art-Metal finish. Refrigerant coils are made of copper tubing and plates, a construction which is said to cause a criss-cross action of liquids circulated through the unit. This feature makes it unnecessary to remove coils built into the fixture, as the unit substitutes a flow of icy water for the ice formerly used around the coils.

It is claimed that because of the small temperature difference between the refrigerant temperature and circulating bath water temperature, a high back pressure can be maintained, increasing compressor capacity and permitting the use of a small compressor for a relatively large demand.

The "Icy Rapids" cooler is adapted to beer cooling and for circulating water systems. Unit is also available, less pump and motor, for water or liquid cooling in non-circulating or dead-end systems.



## TRAINING MEN IS OUR JOB

And U.E.I. Free Placement Bureau supplies trained shop mechanics, installation and service men to this industry. When you need a good workman, use this Free Service. No fees of any kind.

UTILITIES ENGINEERING INSTITUTE  
404 N. Wells St. Established 17 West 60th St.  
Chicago, Illinois 1927 New York, N.Y.

## DEHYDRATED AND SEALED

**LINDERME**  
SEAMLESS  
Copper  
TUBING  
**LINDERME**  
TUBE COMPANY  
CLEVELAND, OHIO, U.S.A.

**Specify PENN**  
AUTOMATIC CONTROLS AND SWITCHES  
FOR RECOGNIZED RELIABILITY  
Write for Catalog  
**PENN ELECTRIC SWITCH CO.**  
GOSHEN, INDIANA

**KERO TEST**  
Valves and Fittings  
The Standard of the  
Industry  
Kerotest Manufacturing Co.  
Pittsburgh, Pa.

## Location of Solenoids

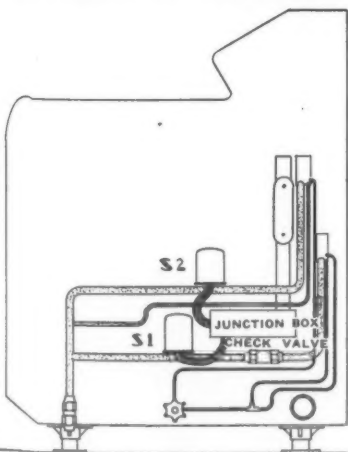


Fig. 4—End view of the installation of the solenoids (S1 and S2) in the Russ system.

to the bottom of the compartment. At this point the suction line rises to the top and passes outside the creamer unit. There the suction line enters the solenoid valve (S2) and is connected to the outlet connection to the condensing unit.

The thermal bulb of the thermostatic expansion valve (X2) is clamped to the refrigerant coil in the water bath at a point two or three turns from the bottom of the coil.

The thermal bulb of the water bath cold control (CC2) is not permitted

**FOR SEAL REPLACEMENTS**  
**USE CHICAGO SEALS**  
**CHICAGO SEAL CO.**  
8 S. CLINTON ST.—CHICAGO, ILL.

## 'Flo-E-Fex' Designed For Wall Installation

CHICAGO—New, compact cooling units for use in reach-in refrigerators and similar applications, and four sizes of "packaged" room coolers are now being manufactured by Refrigeration Appliances, Inc.

Cooling unit, known as the "Flo-E-Fex," is being made in six sizes. Made for installation on wall, connection of refrigerant lines and expansion valve make it ready for operation. Thermostatic expansion valves also are available for the unit.

Fan is on a removable panel, which is said to provide easy access to motor and expansion valve. Valve is enclosed so that it cannot be tampered with. Air inlet opening screen is protected. Tubing is parallel into common liquid and suction headers to provide wet expansion. Drier coil has built-in heat interchanger.

Back of unit is recessed to permit free flow of air and prevent sweating of refrigerator wall in back of unit. Moisture forming on the back of the unit drips into a pan which extends backward.

Special features claimed for the cooling unit are "Pyramid" deflector, which directs airflow, and a double-action drain pan which is said to collect condensate falling from coil without impeding airflow. Spray eliminating screen prevents moisture from being thrown onto merchandise.

An upstroke cooling action, provided by the action of the fan after leaving the deflector and circulating in the refrigerator is said to reduce drying and shrinkage of merchandise.

## 'All-In-One' Manifolds Introduced By Superior

PITTSBURGH—Type HE manifolds with built-in heat exchangers, regular heat exchangers, diaphragm packless valves, and non-chattering check valves comprise the new product list of Superior Valve & Fittings Co.

The combined manifold and heat exchanger was demonstrated at the All-Industry Show by being installed between the evaporator and condensing unit of a regularly operating miniature refrigeration system. To show the superheating effect—average 20° F.—of the heat exchanger on the suction gases, a dial thermometer is attached to the suction line where it enters the manifold, with a second thermometer indicating the temperature at the outlet of the heat exchanger manifold.

The liquid temperature reduction, which also averages 20° F., was indicated by two dial thermometers, one of which is attached to the liquid line entering the exchanger manifold with the second thermometer located between the exchanger and the evaporator.

This demonstration made it possible for interested visitors to the exhibition to see for themselves the superheating effect of this built-in heat exchanger.

To prove the pressure retaining ability of the patented expansible pressure cups in the diaphragm packless valves, these valves were operated in the same miniature refrigeration system with the diaphragms removed.

## BUNDY TUBING



Provides the Strength of Steel  
with Workable Ductility

**BUNDY TUBING CO.**  
DETROIT



## Elements In Sporlan Valves Charged For The Application

ST. LOUIS—A line of thermostatic expansion valves with elements charged according to the application of the valve has just been introduced by Spoeher-Lange Co. as an addition to the Sporlan "controlled performance" series. Selective charges are designed to give the valves the best operating characteristics for each class of installation.

Designated as type "H" units, the valves are obtainable with either of four thermostatic charges, according to the application for which they are intended.

For all commercial applications, except on short pass blower coils and low-temperature applications, the valves are equipped with "Type C" charge. With these elements, it is claimed, "hunting" is reduced to a minimum on long coils, the valves close quickly and positively when the compressor stops, and will not begin to feed at the start of the cycle until the compressor pulls the evaporator pressure down nearly to the normal operating point.

Valves with "Type C" charge automatically maintain higher superheat as the suction pressure increases, and lower superheat as the suction pressure decreases. This type element should not be used where the suction pressure of the system goes below

10 lbs. on "Freon," 5 lbs. on methyl chloride, and 8 inches of vacuum on sulphur dioxide.

On short pass blower coils, best regulation can be obtained by using valves equipped with "Type L" elements, it is claimed. These elements are liquid charged with the same refrigerant the valve is controlling.

For air-conditioning applications (comfort cooling) only, "Type G" gas-charged elements are available. For low-temperature applications, where the load temperature is below 0° F., such as ice cream cabinets, hardening rooms, and refrigerated trucks, a "Type Z" charge is available.

Three additions have been made to the Sporlan line of "Type L" valves for use with "Freon." The new valves have capacities of 1/2, 1, and 10 tons.

Also new to the Sporlan line this year is a line of solenoid valves for "Freon," methyl chloride, and sulphur dioxide. Units in the series are said to be quiet in operation, tight closing, and to be capable of opening easily against rated pressure differentials, even under poor voltage conditions.

Body is machined of brass bar stock, and is cadmium plated. Coil is of moisture-proof construction, and is provided with 36-inch leads. Valve is open when the coil is energized, closed when the coil is de-energized.

Conduit can be taken from either side of the unit, it is claimed, and the whole valve assembly is easily accessible for inspection and service in the field.

## 184,631 Commercial Refrigeration Units Sold To Distributors During 1938 By 14 Nema Companies

The following report of commercial refrigerating and air-conditioning equipment sales for the year 1938 was made to the Commercial Refrigeration Section of the National Electrical Manufacturers Association

(Nema) by the following 14 companies: Brunner Mfg. Co., Carrier Corp., Crosley Corp., Frigidaire Div. General Motors Corp., General Electric Co., Gibson Electric Refrigerator Co.,

Kelvinator Div. Nash-Kelvinator Corp., Merchant & Evans Co., Norge Div. Borg-Warner Corp., Servel, Inc., Uniflow Mfg. Co., Universal Cooler Corp., Westinghouse Electric & Mfg. Co., and York Ice Machinery Corp.

SALES FOR THE YEAR 1938	Domestic		Canadian		Other Foreign		Total World	
	Quan.	Value	Quan.	Value	Quan.	Value	Quan.	Value
1. Bottle Water Coolers—Complete.....	3,287	\$ 212,619	48	\$ 3,189	437	\$ 30,296	3,752	\$ 246,104
2. Pressure Water Coolers—Complete.....	13,553	1,391,350	107	9,454	1,245	128,350	14,905	1,529,154
3. Water Coolers—Low Side Only.....	783	71,709	17	1,480	50	2,896	850	76,085
4. Ice Cream Cabinets—Complete.....	25,525	3,887,151	1,730	216,410	1,573	195,075	28,828	4,298,636
5. Ice Cream Holding Cabinets Only (Remote).....	2,766	363,826	47	5,881	71	9,894	2,884	379,601
6. Bottled Beverage Coolers—Complete.....	31,885	3,040,888	3,110	256,076	1,468	132,515	36,463	3,429,479
7. Beverage Coolers (No High Sides).....	1,078	94,389	3	169	117	6,271	1,198	100,829
8. Milk Coolers—Complete.....	358	43,339	.....	.....	10	1,622	368	44,961
9. Milk Cooling Cabinets (No High Sides).....	1	57	.....	.....	.....	.....	1	57
10. Self-Contained Air Conditioners Air Cooled—All Sizes.....	9,228	1,834,800	41	8,411	1,206	252,144	10,475	2,095,355
11. Self-Contained Air Conditioners Water Cooled—Under 2 Hp.....	850	151,635	4	960	155	34,990	1,009	187,585
12. Self-Contained Air Conditioners Water Cooled—2 Hp. and Up.....	2,885	1,575,290	20	11,614	87	51,276	2,992	1,638,180
13. Air Conditioners—Central Stations 5-Ton Capacity and Over.....	876	594,804	5	6,174	30	31,818	911	632,796
14. Air Conditioners—Floor Type (No High Sides).....	1,089	430,786	8	4,430	174	76,099	1,271	511,315
15. Air Conditioners—Ceiling (Cooling Only—No High Sides).....	1,597	260,045	7	1,509	312	37,492	1,916	299,046
16. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides).....	271	137,074	.....	64	47	26,320	318	163,458
17. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces).....	508	118,255	1	225	152	33,435	661	151,915
18. Condensing Units Less Than 1/2 Hp.....	15,458	776,562	617	35,036	3,121	179,271	19,196	990,869
19. Condensing Units—1/2 Hp.....	22,303	1,576,778	514	46,243	3,709	296,300	26,526	1,919,321
20. Condensing Units—3/4 Hp.....	12,092	1,203,791	454	52,287	2,245	239,839	14,791	1,495,917
21. Condensing Units—1 Hp.....	7,424	1,005,704	268	39,760	1,491	215,697	9,183	1,261,161
22. Condensing Units—1 1/2 Hp.....	4,623	731,814	192	33,170	755	134,163	5,570	899,147
23. Condensing Units—2 Hp.....	2,968	593,883	98	21,723	549	119,467	3,615	735,073
24. Condensing Units—2 1/2 Hp.....	1,549	363,493	46	11,788	242	58,864	1,837	434,145
25. Condensing Units—3 Hp.....	1,073	328,601	48	13,280	520	126,825	1,641	468,706
26. Condensing Units—5 Hp.....	803	358,529	11	4,966	135	61,996	949	425,511
27. Condensing Units—7 1/2 Hp.....	467	297,355	8	5,221	84	50,851	559	353,427
28. Condensing Units—10 Hp.....	420	318,613	2	1,261	70	53,660	492	373,534
29. Condensing Units—15 Hp.....	408	360,584	7	5,964	33	31,713	448	398,261
30. Condensing Units—20 Hp.....	294	319,782	3	3,823	33	38,634	330	362,244
31. Condensing Units—25 Hp.....	163	206,445	2	2,053	13	17,422	178	225,920
32. Condensing Units—30 Hp.....	182	274,563	3	4,455	5	6,825	190	285,843
33. Condensing Units—40 Hp.....	151	283,440	1	1,440	17	26,690	169	311,570
34. Condensing Units—50 Hp.....	148	326,663	.....	.....	17	32,572	165	359,235
35. Total—Lines 18 to 34 Inclusive.....	70,526	9,326,600	2,274	282,475	13,039	1,690,789	85,839	11,299,864
36. Total—Lines 1, 2, 4, 6, 8, 10, 11, 12, 35.....	158,077	.....	7,334	.....	19,220	.....	184,631	.....
37. Commercial Evaporators (Not Reported Above).....	25,716	916,427	2,716	83,351	8,357	271,863	36,789	1,271,641
38. Air-Conditioning Evaporators (Not Reported Above).....	2,054	388,711	7	1,421	43	11,261	2,104	401,393
39. Total Commercial & Air Conditioning.....	.....	\$24,839,755	.....	\$893,293	.....	\$3,024,406	.....	\$28,757,454

## 8,025 Commercial Units Sold In December By Nema Companies

SALES FOR DECEMBER, 1938	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete.....	186	\$ 13,478	2	\$ 123	46	\$ 3,083	234	\$ 16,684
2. Pressure Water Coolers—Complete.....	591	58,946	5	404	142	13,518	738	72,868
3. Water Coolers—Low Side Only.....	26	2,366	.....	.....	3	168	29	2,534
4. Ice Cream Cabinets—Complete.....	1,383	223,206	48	5,261	29	4,217	1,460	232,684
5. Ice Cream Holding Cabinets Only (Remote).....	41	5,662*	.....	.....	10	1,436	51	7,098
6. Bottled Beverage Coolers—Complete.....	274	32,012	529	44,960	73	7,850	876	84,822
7. Beverage Coolers (No High Sides).....	114	7,749	1	35	.....	.....	115	7,784
8. Milk Coolers—Complete.....	5	820	.....	.....	.....	.....	5	820
9. Milk Cooling Cabinets (No High Sides).....	.....	.....	.....	.....	.....	.....	.....	.....
10. Self-Contained Air Conditioners Air Cooled—All Sizes.....	6*	1,532*	.....	.....	131*	27,329	125	25,797
11. Self-Contained Air Conditioners Water Cooled—Under 2 Hp.....	4	870	.....	.....	20	3,452	24	4,322
12. Self-Contained Air Conditioners Water Cooled—2 Hp. and Up.....	107	51,266	.....	.....	11	6,588	118	57,854
13. Air Conditioners—Central Stations 5-Ton Capacity and Over.....	44	33,935	.....	.....	4	4,715	48	38,650
14. Air Conditioners—Floor Type (No High Sides).....	30	17,638	.....	.....	12	6,346	42	23,984
15. Air Conditioners—Ceiling (Cooling Only—No High Sides).....	31*	5,709*	.....	.....	21	2,515	52	8,224
16. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides).....	16	7,740	.....	.....	3	1,680	19	9,420
17. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces).....	39	8,369	.....	.....	16	3,600	55	11,969
18. Condensing Units Less Than 1/2 Hp.....	854	39,602	10	624	133	7,249	997	47,475
19. Condensing Units—1/2 Hp.....	1,549	90,989	21	2,037	172	15,253	1,742	108,279
20. Condensing Units—3/4 Hp.....	497	50,980	13	1,605	98	11,873	608	64,458
21. Condensing Units—1 Hp.....	339	45,201	7	1,109	86	12,745	432	59,055
22. Condensing Units—1 1/2 Hp.....	174	28,935	8	1,388	31	5,865	213	36,188
23. Condensing Units—2 Hp.....	110	21,122	3	717	38	8,363	151	30,202
24. Condensing Units—2 1/2 Hp.....	65	15,877	.....	.....	11	2,682	76	18,559
25. Condensing Units—3 Hp.....	32	10,654	1	236	33	8,285	66	19,175
26. Condensing Units—5 Hp.....	35	14,072*	.....	.....	7	3,017	42	17,089
27. Condensing Units—7 1/2 Hp.....	16	10,347	.....	.....	3	1,994	19	12,341
28. Condensing Units—10 Hp.....	14	10,834	.....	.....	3	2,372	17	13,206
29. Condensing Units—15 Hp.....	18	16,641	.....	.....	3	2,886	21	19,527
30. Condensing Units—20 Hp.....	14	17,222	.....	.....	1	1,145	15	18,367
31. Condensing Units—25 Hp.....	6	8,283	.....	.....	.....	.....	6	8,283
32. Condensing Units—30 Hp.....	11	16,689	.....	.....	1	1,365	12	18,054
33. Condensing Units—40 Hp.....	13	26,607	.....	.....	1	1,570	14	28,177
34. Condensing Units—50 Hp.....	9	19,544	.....	.....	5	9,500	14	29,044
35. Total—Lines 18 to 34 Inclusive.....	3,756	443,599	63	7,716	626	96,164	4,445	547,479
36. Total—Lines 1, 2, 4, 6, 8, 10, 11, 12, 35.....	6,300	.....	647	.....	1,078	.....	8,025	.....
37. Commercial Evaporators (Not Reported Above).....	1,306	42,779	90	1,972	372	13,765	1,768	58,516
38. Air-Conditioning Evaporators (Not Reported Above).....	125	19,414	.....	.....	4	581	129	19,995
39. Total Commercial & Air Conditioning.....	.....	\$974,026	.....	\$60,471	.....	\$197,007	.....	\$1,231,504

\*Includes sales and credits.

**TYLER** The Original WELDED STEEL Commercial Refrigerators

**NEW 1939 FEATURES**

Tyler's original welded steel construction is still the most advanced in the commercial refrigeration field. And the 1939 line is the greatest ever. New improvements include wider doors, for greater accessibility; wider front glass for increased visibility and new, patented NON-GLARE lighting system for brighter display.

**THE BIG VALUE LINE**

Complete line covers wide field. Built from experience with thousands of installations. Offers sensational values because of standardized quantity production. You can meet today's demands with Tylers and make more money. Write NOW for dealer proposition.

New York Office: 601 W. 24th St.  
Boston Office: 683 Beacon St.  
Chicago Office: 165 W. Ogden Ave.

**TYLER FIXTURE CORP. Dept. R, NILES, MICH.**

**LARKIN** Instantaneous Water Coolers will increase your profits...

when you sell these coolers, your customers stay sold and satisfied!

Read what R. A. Rinklin, Manager Dr. Pepper Bot. Co., Jefferson City, Mo. says... "We have nothing but favorable comments and enthusiastic recommendations for your water cooler."

write today for complete engineering and sales data

Built only by **LARKIN COILS, INC.**

General Office and Factory  
519 FAIR STREET, S.E., ATLANTA, GA.  
NEW YORK BRANCH, 57-59 E. 11th St.

31 Sizes  
Hundreds of Satisfied Users

**PITTSBERG** REFRIGERANTS

**GUARANTEED REFRIGERANTS For All Applications**

Triple-Refined SULPHUR DIOXIDE  
New Process METHYL CHLORIDE  
High-Test METHYLENE CHLORIDE  
Kinetic Chemicals "FREON-12"

Sold By Leading Jobbers and Distributors Throughout the West

**PITTSBERG CHEMICAL CO**  
Central Tower, San Francisco, Calif.

A new Dehydrating Fluid for frozen expansion valves

A free sample, postpaid, will be sent Jobbers and Service organizations.

**WILLARD C. STARCHER**  
Refrigerants and Chemicals  
Spencer, West Va.

**DISPLAY CASES**

Write for details of this sensational new 100% PORCELAIN Display Case line

**MIDWEST MFG. COMPANY**  
Galesburg, Illinois

Manufacturers are invited to write for complete details regarding Universal Cooler refrigerating units.

**Universal Cooler Corp., Detroit**



# Engineering

## Formation of Ice In Expansion Valves And Capillary Tubes Counteracted By New Product, Ansul Engineers Assert

By the Research Department, Ansul Chemical Co.

THE separation of ice at expansion valves, and capillary tubes constitutes one of the most serious causes of trouble in machines charged with methyl chloride, methylene chloride, or the "Freon" refrigerants. Dry refrigerants, dry oils, and dry machines are all being produced and marketed today, but in spite of this, moisture trouble in the form of ice is still encountered.

How the moisture gets into the machine is important and should be determined, if possible, in order to prevent its entrance. However, it is present in many units, and therefore attention must be turned to methods of eliminating or minimizing its effects on machine operation.

A number of companies, as well as refrigeration service engineers, have added methyl alcohol (wood alcohol, methanol) to machines in order to eliminate the formation of ice at expansion valves and capillary tubes.

Application for this purpose has been successful in the elimination of ice, but is undesirable due to the fact that methyl alcohol forms solid corrosion products which in time produce faulty machine operation.

During the past two years, the research department has been searching for materials which would have the property of preventing ice formation in machines and yet would not produce objectionable corrosion products. As the result of this search a number of materials were found which possessed the desired properties.

Each was carefully evaluated on the following points:

1. Prevention of ice formation.
2. Corrosiveness.
3. Effect on oil and/or refrigerants.
4. Flammability and explosibility.
5. Life and health hazard.

6. Physical properties (boiling points, freezing points) which might affect usefulness.

7. Effect on waxes, sludges, and driers.

8. Residue on evaporation.

9. Operations in machines containing moisture.

The result of this research is Ice-X\*

### HOW IT ACTS

This material, when present in proper amounts, in methyl chloride, methylene chloride, and the "Freon" refrigerants, prevents the formation of ice crystals and/or dissolves formed ice, in the colder parts of a refrigeration machine.

It will not eliminate faulty valve operation due to wax, sludge, dirt, mechanical trouble, etc.

This property is illustrated in Fig. 1. To prepare this illustration, the following procedure was adhered to. Two tubes containing Carrene (selected for convenience of boiling point; its action is identical with that of methyl chloride and the "Freon" refrigerants) containing 0.1% moisture were cooled to -30° F. in order to form the quantity of ice shown in tube No. 2.

After 10 minutes, at this temperature, both tubes were removed from the cooling bath and Ice-X (10% by volume) added to tube No. 1. The ice crystals disappeared quickly, on shaking, in tube No. 1, but remained unchanged in tube No. 2.

The tubes were restored to the cooling bath and allowed to remain there several hours. Ice did not reform in tube No. 1. The photograph was taken after the tubes had been in the bath some considerable time.

\*Trade Mark. Patent pending.

Table 2—Corrosion Tests

Glass Tubes Kept at 80° and Above.				Report as of Dec. 14, 1938			
Date Started	% Ice-X	% Oil	% Water	Refrig.	Corrosion Fe	Corrosion Cu	Liquid Change
10-8-37	90	10	0.0	.....	None	None	None
10-8-37	100	..	..	.....	None	None	None
11-16-37	10	10	.05	"F-12"	None	None	None
11-16-37	10	..	.05	"F-12"	None	None	None
11-16-37	10	10	.0025	"F-12"	None	None	None
10-7-37	12	10	.004	CH <sub>2</sub> Cl	None	None	None
10-5-37	5	10	.004	CH <sub>2</sub> Cl	None	None	None
10-7-37	12	10	.05	CH <sub>2</sub> Cl	Very Slt.	None	None
10-7-37	5	10	.05	CH <sub>2</sub> Cl	None	None	None
10-7-37	12	10	.10	CH <sub>2</sub> Cl	Slt.	Slt.	None
10-7-37	5	10	.10	CH <sub>2</sub> Cl	Slt.	Slt.	None
10% Acrolein Added to Following:							
10-7-37	5	10	.004	CH <sub>2</sub> Cl	None	None	None
10-7-37	5	..	.05	CH <sub>2</sub> Cl	Very Slt.	Very Slt.	None
10-11-37	5	10	.05	CH <sub>2</sub> Cl	None	Very Slt.	None
10-11-37	5	..	.05	CH <sub>2</sub> Cl	None	None	None

Table 3—Additional Corrosion Tests

Started	% Ice-X	% Oil	% Water	Refrig.	Corrosion
Brass					
11-4-38	100	0	0.0	None	Slt. Tarnish
11-4-38	85	15	0.0	None	No Change
11-4-38	10	0	.05	CH <sub>2</sub> Cl	Slt. Tarnish
11-4-38	10	10	.05	CH <sub>2</sub> Cl	Slt. Tarnish
11-4-38	10	0	0.0	CH <sub>2</sub> Cl	No Change
Neoprene					
11-4-38	100	0	0.0	None	No Change—Slt. Yellow Color and Sediment
11-4-38	85	15	0.0	None	No Change—Slt. Yellow Color and Sediment
11-4-38	10	0	.05	CH <sub>2</sub> Cl	No Change—Slt. Yellow Color and Sediment
11-4-38	10	10	.05	CH <sub>2</sub> Cl	No Change—Slt. Yellow Color and Sediment
11-4-38	10	0	0.0	CH <sub>2</sub> Cl	No Sediment—Slt. Color
Green Felt					
11-4-38	100	0	0.0	None	No Change
11-4-38	85	15	0.0	None	No Change
11-4-38	10	0	.05	CH <sub>2</sub> Cl	No Change
11-4-38	10	10	.05	CH <sub>2</sub> Cl	No Change
11-4-38	10	0	0.0	CH <sub>2</sub> Cl	No Change
Oil					
11-4-38	60	40	0.0	None	No Change

Thus it is seen that it will dissolve ice crystals.

A modification of this experiment was carried out in order to show the ice prevention action of Ice-X. Two samples of Carrene (0.1% moisture) were placed in tubes and to one sample 10% Ice-X was added. The tubes were cooled to -30° F., at which temperature ice formed in the tube which did not contain the material. Ice did not form in the tube containing Carrene and Ice-X even after several hours. This demonstrates that it prevents the formation of ice crystals.

### QUANTITY FACTORS

Ice-X thus insures against freezing of expansion valves and capillary tubes and the separation of ice crystals in evaporators and coils. The quantity per pound of refrigerant necessary to prevent formation of ice crystals and/or dissolve ice crystals depends upon:

1—Percentage of water in refrigerant, for the greater the amount of water, the greater the quantity of ice formed, at a given temperature.

2—Minimum temperature in machine, for the lower the temperature, the greater the quantity of ice.

3—The refrigerant, for the quantity of ice separating from various refrigerants differs. To illustrate, if the same moisture is present in a machine charged with "Freon-12" and methyl chloride, respectively, a larger amount of ice may form in the "Freon-12" than in the methyl chloride machine under similar conditions.

### OIL

Ice-X does not react with oil. It is slightly soluble in cold and completely soluble in hot oil. At room temperature, Ice-X dissolves in oil and oil in Ice-X, to form two mutually saturated liquid layers, with the Ice-X layer below.

At higher temperatures (78° C. = 172.4° F.) Ice-X and oil are completely miscible. Solubility data are given in Table 1.

Table 1—Solubility Relations of Ice-X and Oil

Temperature		Solubility by Volume Per Cent	
°C.	°F.	Ice-X	Oil
15	59	1.6	2.5
25	77	2.1	3.5
35	95	3.5	5.0
45	113	6.2	7.0
55	131	10.8	9.8
65	149	17.5	14.5
75	167	30.0	25.0
78	172.4	50.0	50.0

As far as is known, Ice-X does not affect the lubricating property of oil. It forms an emulsion with oil which gradually breaks down unless constantly agitated.

It is miscible in all proportions with methyl chloride, methylene chloride, and the "Freon" refrigerants and their oil mixtures. It has no action on these refrigerants and their oil mixtures at the temperatures encountered in a machine.

It may be used in machines charged with acrolein (1%) methyl chloride, since there is no action on this refrigerant mixture.

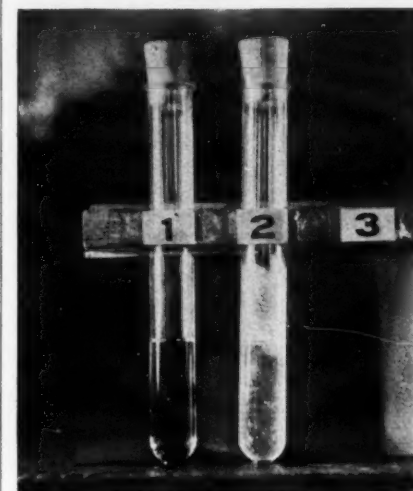
It should not be added to machines containing sulphur dioxide for two reasons:

1. There are no ice crystals to dissolve.

2. Sulphur dioxide corrodes metals in the presence of Ice-X although there is no reaction between sulphur dioxide and the material.

Where sulphur dioxide is used as a tracer gas or has been left in the machine after a change over the action on metals is very much slower, but will occur over a longer period of time.

Fig. 1—What Tests Showed



Test Tube No. 1 looked like No. 2 until Ice-X was added. Then the ice crystals disappeared.

The addition of 10% by volume raises the boiling point of an oil-refrigerant mixture less than 1° F.

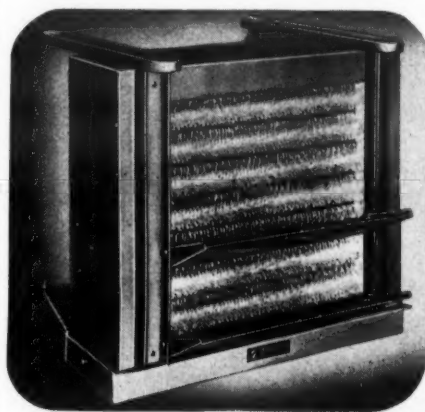
### CORROSION TESTS

Ice-X is not corrosive. It does not contain methyl alcohol, ethyl alcohol, alkali, acid, salt, or other corrosive materials.

Results of corrosion tests are reported in detail in Table 2. Attention is called to the fact that these were started in October and November, 1937. Therefore results are based on 14 month's observation.

Similar corrosion tests (Table 3) of shorter duration have failed to show action on brass in the absence of water. Slight corrosion results when .05% water is present. These tests were confined to methyl chloride as the refrigerant.

(Continued on Page 22, Column 3)



COMPACT, QUIET,  
AND PLEASING  
IN DESIGN

## PEERLESS UNIT COOLER ★

Small In Size But A Giant In Performance

• Soundly engineered, it brings increased efficiency and a more compact design. The spine or high dispersion coil, an exclusive feature, has a higher B. T. U. transfer. Flow of heat into refrigerant is free and direct. Operating on a short cycle, there is less drying of products. Standardize on Peerless. You'll have more successful unit cooler installations.

Ask Your Jobber for Details or Write for Catalog

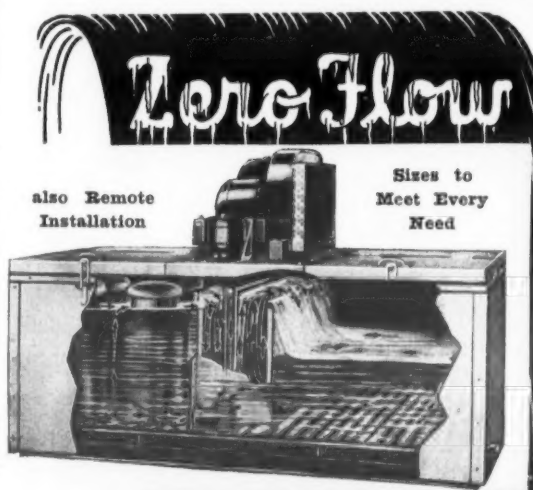
PEERLESS OF AMERICA INC.

Main Factory • General Offices  
515 West 35th Street  
Chicago

New York Factory  
43-20 34th Street  
Long Island City

Pacific Coast Factory  
3000 S. Main Street  
Los Angeles

Export Division:  
P. O. Box 636, Detroit  
Michigan, U. S. A.



## CONSIDER: Wilson Systems Of Milk-Cooling Build

DEALER SALES because Wilson has an efficient, LIFE-TESTED cooler for every type of milk-cooling requirement. The ZERO-FLOW appeals to the dairyman because of its extremely fast cooling and perfect storage of two milkings daily, with no shifting of ANY cans, night or morning. Exclusive high-water level is maintained during cooling in EITHER of its two equal cooling compartments, automatically. For details about Wilson Systems write:

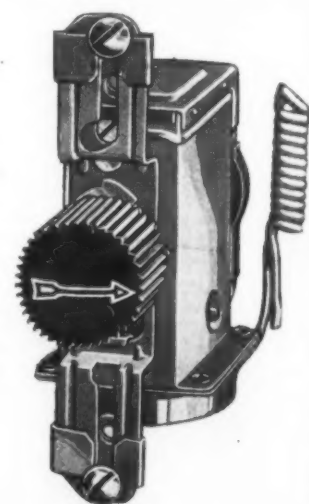
WILSON CABINET CORP., Smyrna, Del.



## "HEY! WHAT ABOUT THESE SINGLE DIAL JOBS?"

There's nothing to it! Ranco's new general replacement fits all single dial control applications on household electric refrigerators. Type RJS slips right in—either vertical or horizontal mounting—no trouble at all.

Stainless steel construction with outside differential adjustment and adjustable mounting brackets. Dial pointer serves for cold control, defroster and on-off switch. A positive, completely dependable control—Ranco Type RJS.



Ranco INC.,  
Columbus, Ohio, U.S.A.



## THE BUYER'S GUIDE

**53 YEARS OF SERVICE 1886 1939**

**PERCIVAL Line meets EVERY NEED!**

Includes Coolers, Reach-In Refrigerators, Top Type, Double Duty, Delicatessen, Dairy and Produce Display Cases and Percival Condensing Units.

Quality built; corkboard insulated; porcelain clad; beautifully streamlined. Coiling system is second to none.

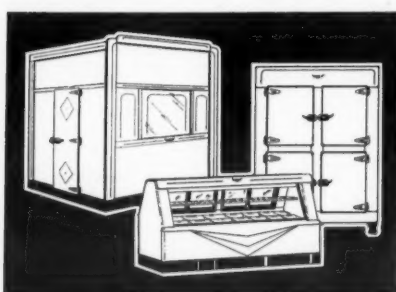
Write for attractive prices, literature and Distributor's proposition.

**C.L. PERCIVAL CO.**  
DES MOINES, IOWA

## MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois



### A REALLY COMPLETE LINE

The "Fogel line for '39" enables the dealer to fill orders for every conceivable type of refrigerated food storage and display equipment.

This completeness increases the dealer's volume and the Fogel Policy... "ONE QUALITY ONLY—THE HIGHEST" builds goodwill and brings repeat business. Interesting distributor proposition to qualified firms.

INQUIRE TODAY!

**FOGEL REFRIGERATOR COMPANY** Since 1899  
16th & Vine Sts., Phila., Pa.



**Chieftain**

Message No. 27

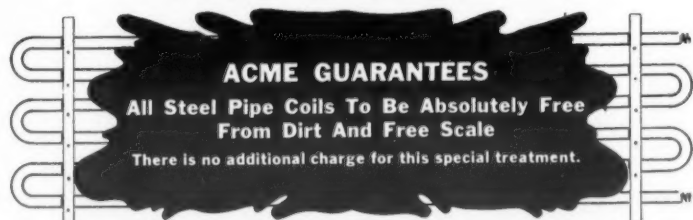
### CONDENSING UNIT FACTS

1. It is not "performance against price",—which interests you.
2. But "performance with right price",—that answers your problem.

Our condensing units answer your problem.

**TECUMSEH PRODUCTS CO., TECUMSEH, MICH.**

### PIPE COILS



#### ACME GUARANTEES

All Steel Pipe Coils To Be Absolutely Free From Dirt And Free Scale

There is no additional charge for this special treatment.

Jackson

**ACME INDUSTRIES, Inc.** Michigan

**GILMER MAKES THE BELTS THAT FIT**



4450 models of refrigerators  
247 makes of air-conditioners, etc.

Gilmer jobbers everywhere, with full stocks, guarantee you fast emergency service.

All Gilmer Belts listed, by lengths, manufacturers' part numbers, cross-sections, in "America's Belt Bible," the Gilmer Catalog. Get your FREE COPY today.

**L. H. GILMER COMPANY, Tacony, Philadelphia**

### A tight system calls for FITTINGS THAT WILL STAY TIGHT

IMPERIAL S. A. E. flared fittings have been setting a mighty fast pace in the air conditioning and refrigeration field... and their rapid acceptance by installation and service men is based on results. Imperial fittings are tight when the job is finished and they stay tight.

Write for catalog covering complete listing of sizes and prices.

IMPERIAL BRASS MFG. CO., 565 S. Racine Ave., Chicago



#### S. A. E. FLARED FITTINGS

Brass forged nuts, tees, elbows and crosses—will not crack. Heavier and stronger than standard—non-porous—no seepage or season cracking. Tees and elbows have flats for wrench.

**IMPERIAL Fittings**

ORDER FROM YOUR JOBBER

VALVES • TOOLS • CHARGING LINES • FLOATS • DEHYDRATORS • STRAINERS

## Properties of Ice-X and Its Effect on Various Substances Described

(Continued from Page 21, Column 5)

Neoprene, placed in contact with various mixtures of oil, methyl chloride, water, and Ice-X discolored them slightly and produced a little sediment after a month's time. It becomes more pliable, but seems to be changed in no other characteristic. Similar pliability is imparted to Neoprene by oil, methyl chloride, Ice-X, oil-methyl chloride mixtures, and Ice-X-oil-methyl chloride mixtures.

It has no effect on felt, either alone or mixed with refrigerant.

There are some indications that the material exerts an anti-corrosion effect, although little data are available containing this action.

### WAX

It will not prevent the separation of wax from oil refrigerant mixtures and it will not dissolve separated wax.

Machine tests have proved that wax may separate at the expansion valve even when it is present. This may result in blaming moisture for frozen valves, when in reality the trouble is due to wax. It does not increase the separation of wax.

### SLUDGE

The action of Ice-X is not sufficient to prevent the usual troubles produced by sludge, since it will loosen certain types of sludge, but as far as is known, it will not dissolve sludges completely.

### DRIERS

Activated Alumina, "MIC," Drierite, Silica Gel, and calcium oxide may be used on a machine containing Ice-X. Neither calcium chloride nor barium oxide should be used since they both revert to solid masses in the presence of the material.

### PROPERTIES

The material is a water-white liquid which does not discolor or separate sediment in storage. It may be packaged in tin cans, steel, or glass.

**Flammability and Explosibility:** The material has a flash point of 111° F. (44° C.). Since it ignites only when warm, it may be considered but slightly flammable.

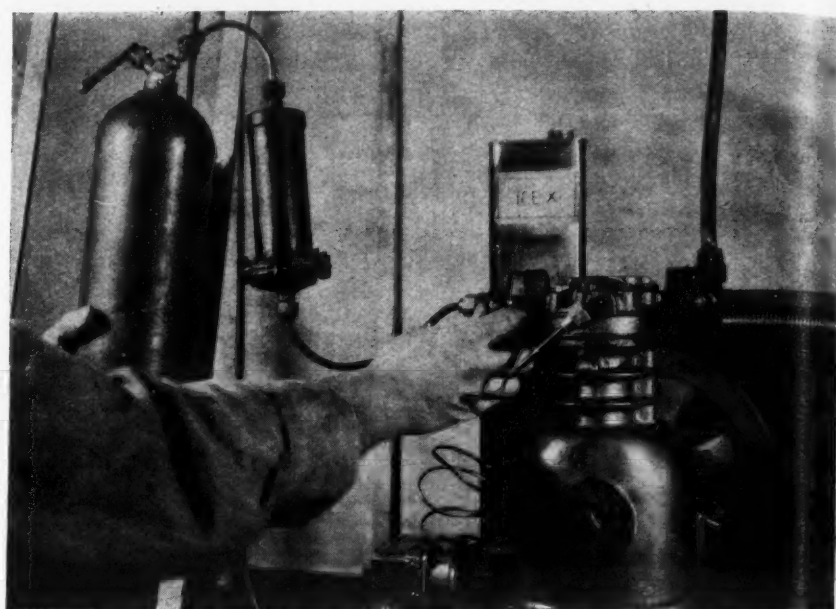
Ice-X will, under certain conditions, form explosive mixtures with air. Its explosive limits are 2.6—15.7%.

The hazards associated with these two properties are judged to be small under normal conditions.

**Residue on Evaporation:** Ice-X evaporates completely, leaving only a very small amount of residue (less than 30 parts per million).

**Freezing Point:** Ice-X in the

## Fig. 2—Adding Ice-X To Refrigeration System



It is added to liquid receiver through the compressor discharge valve.

pure state freezes below -94.0° F. (-70° C.) which insures that it will not change to a solid in the expansion valve or coil. It will not "freeze" out of an oil-refrigerant mixture above approximately -100° F.

**Life and Health Hazard:** There is no life and health hazard associated with normal use.

### MACHINE TESTS

Three 1/4-hp. commercial methyl chloride and "Freon-12" units were used for these tests. They were connected with thermostatic expansion valves and expansion coils, which were placed in large metal cans and thoroughly insulated with rock wool.

The temperatures of the coils were recorded automatically, using thermocouples and a recorder. The temperatures of the valves and coils were taken periodically with pentane thermometers.

Each machine was set to operate at the lowest practical temperature, usually below 0° F., in order to give Ice-X the severest test possible.

The machines were first run for two or three days to insure their being in good mechanical condition. Temperature records were made during this period and throughout the remainder of the test.

One cubic centimeter of water [equivalent to .055% by weight in methyl chloride (4 lbs.) and .037% by weight in "Freon-12" (6 lbs.)] was added to the liquid receiver of each machine. A period of from 8 to 15 hours usually elapsed before the expansion valves froze and the coils warmed up.

The expansion valve of each machine was allowed to warm up until it broke loose and the machine began operating once more. After a few hours the valve froze again and was allowed to warm up until it broke

loose. In some tests this operation was repeated several times, in others only once or twice. See Chart 1.

The addition of the material was made while the valves were frozen, at the rate of 6 fluid ounces to a machine and as follows. The liquid line valve was closed during the addition of Ice-X.

All but three-fourths fluid ounce of the total charge was added to the liquid receiver through the discharge valve of the compressor. Addition to the compressor or in suction line was not practiced. The method of addition is illustrated in Fig. 2, and consisted of placing the charge of Ice-X in the outer shell of a drier unit, which was attached to the port of the compressor discharge valve.

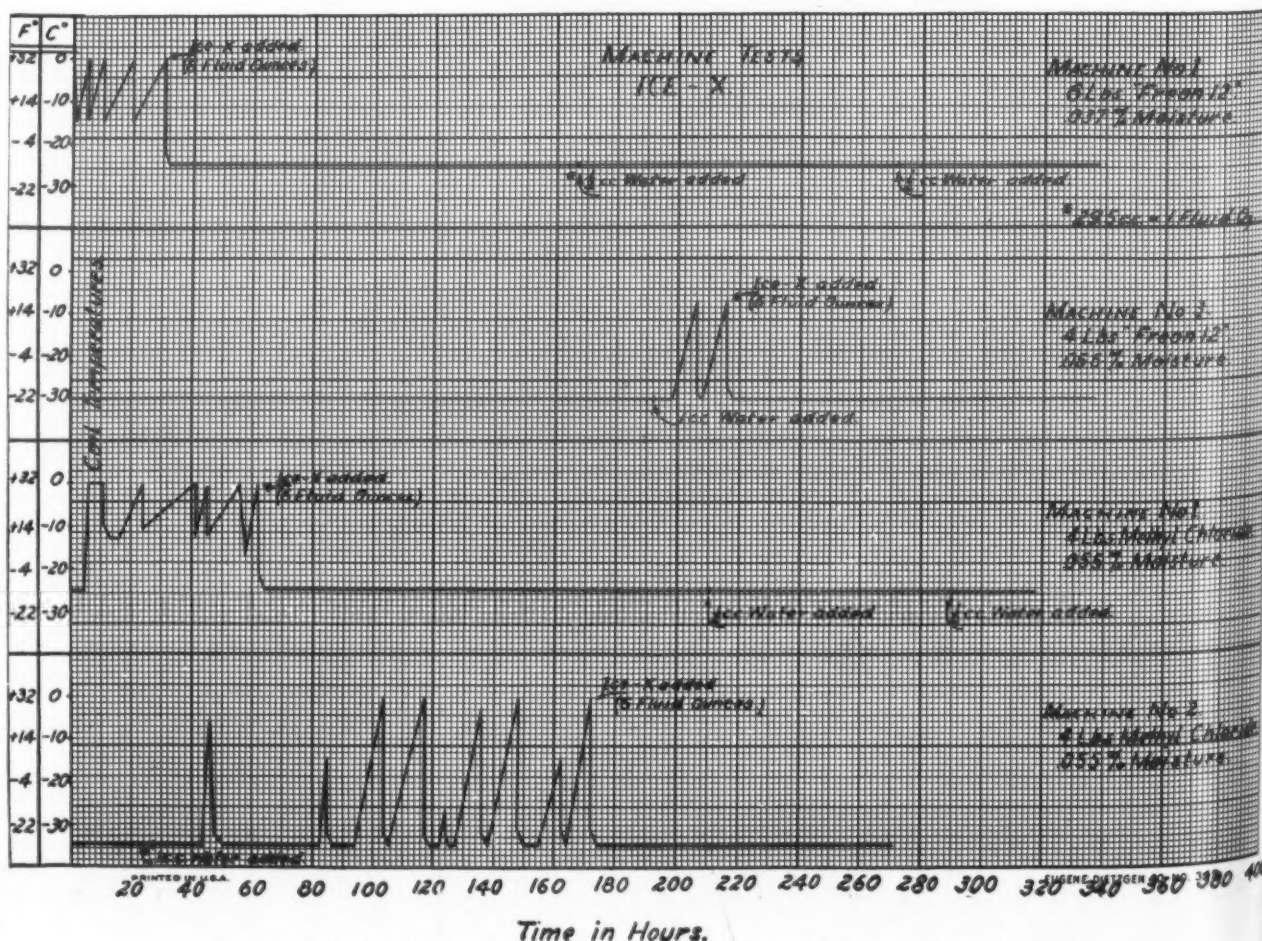
A cylinder containing warm methyl chloride or "Freon-12" was connected to the other end of the shell, and the discharge and cylinder valves opened. As soon as the charge had been forced into the machine, due to the greater vapor pressure of the warm refrigerant, the valves were closed and the charging unit disconnected.

In order to be certain of the removal of the water which had accumulated in the expansion valve, it was necessary to drain the liquid line just ahead to allow for the addition of approximately 1/4 ounce of Ice-X. The charge was added through a T equipped with a valve, using the procedure outlined above.

The charging apparatus was disconnected and the liquid line valve opened. The pressure of the refrigerant forced Ice-X through the expansion valve, which broke loose almost immediately. The compressor started and the temperatures of the valve and coil quickly reduced to normal operating conditions. The machines operated satisfactorily thereafter to the end of the test run. An average

(Concluded on Page 23, Column 1)

## Chart 1—Performance In Machine Tests



These four time-temperature charts of test runs show the action of Ice-X.



## How 'Valve Defroster' Performed In Tests With Various Units

(Concluded from Page 22, Column 5) test of this type required 11 to 14 days.

The complete temperature-time records of representative tests are given in Chart 1. These were copied from the recording machine charts which do not lend themselves well to publication.

A brief discussion of these curves would seem desirable. For all of these tests Ice-X was added while the valve was frozen.

### MACHINE NO. 1 "FREON-12"

A sufficient amount of water was present in the machine at the start of the run to produce freezing of the valve within a short time. This is indicated by the first rise in the temperature of the coil. The valve broke loose and the coil temperature fell, after which freezing of the valve occurred once more followed by a rise in the coil temperature.

When the material was added the coil temperature fell to approximately  $-13^{\circ}\text{F}$ . and remained there until the end of the run (340 hours). The addition of more water at regular intervals failed to disturb the machine.

### MACHINE NO. 3 "FREON-12"

This machine was dry at the start of the test. It ran normally for 192 hours. The addition of 1 cc. of water produced a freeze-up of the valve, followed by a rise in coil temperature until the valve broke loose.

When the valve froze the second time, the substance was added, resulting in normal operation for the remainder of the test.

### MACHINE NO. 1 METHYL CHLORIDE

This record is similar in most respects to the first one discussed, except for the nature of the freezing portion of the curve.

### MACHINE NO. 2 METHYL CHLORIDE

This machine operated normally until 1 cc. of water was added. The freeze-up record was extended purposely in order to determine whether the machine would resume normal operation without the addition of Ice-X. When it became apparent that it would not, it was added and the machine began normal operation.

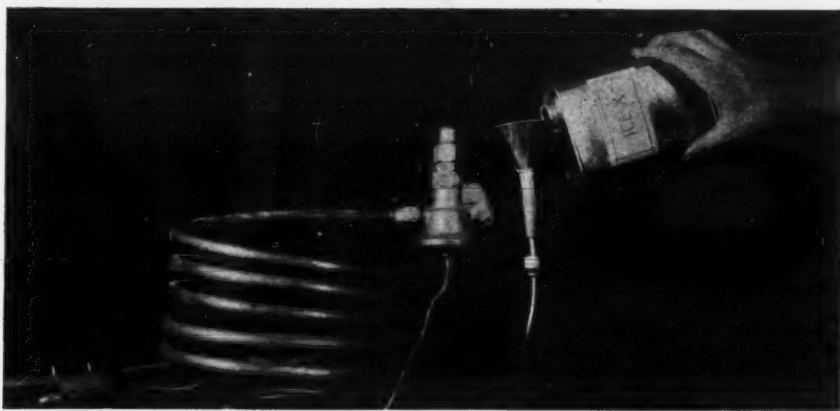
All of these tests were terminated at the end of the periods designated in order that the machines might be used for other tests.

At the conclusion of the machine tests described above, the three test machines were started on runs designed to continue until mechanical or other difficulties bring them to an end. The conditions for these tests are the same as for the shorter runs. The expansion valve temperatures for the three machines are, approximately,  $-22^{\circ}$ ,  $-13^{\circ}$  and  $-18^{\circ}\text{F}$ .

### RAN FOR 41 DAYS

The No. 3 machine test operated for 41 days, when a broken shaft seal forced a shut-down. The machine, expansion valve, etc., were dismantled and examined. There

Fig. 3—Step 4 In Using New Product



Adding Ice-X to liquid line leading to expansion valve.

was no corrosion of the compressor, expansion valve, or other parts of the system. The oil, refrigerant, and Ice-X were unchanged. There was no evidence of acidity.

The other two machines have been operating normally for better than 90 days.

### BEHAVES LIKE OIL

The tracing of the course of Ice-X through the machine is of considerable interest. In general, it behaves like oil. Since all of the charge was either in the liquid receiver or line, it passed through the expansion valve, coil, and suction line in the order named.

The evaporation of the refrigerant left a mixture of oil and Ice-X which behaves like oil under normal operating conditions. The greater part of the total charge finds its way to the crankcase of the compressor where it forms a fairly stable emulsion which behaves like oil.

After the machine has been operating for some time, an analysis of the oil-Ice-X-refrigerant mixture from the receiver, revealed (in a methyl chloride unit) 2% Ice-X, 10% oil, and the remainder methyl chloride.

### USE OF OIL TRAP

The quantity of Ice-X and oil circulated will depend upon the type of machine, refrigerant, and whether an oil trap is used. Obviously, since the material behaves like oil, the presence of an oil trap should reduce the amount circulating with the refrigerant.

Just how much an oil trap will affect the efficiency of Ice-X cannot be predicted at the present time. Tests on individual oil-trap equipped machines must be made before this question can be settled.

It seems quite apparent that, except in those cases where virtually nothing but pure refrigerant is being circulated, a fairly definite quantity travels with the oil-refrigerant mixture.

### DIRECTIONS FOR USE

- 1—Close liquid receiver valve.
- 2—Add to liquid receiver  $1\frac{1}{2}$  fluid ounces of Ice-X per pound of refrigerant. Do not add to suction line or compressor.
- 3—Drain liquid line just ahead of expansion valve.
- 4—Add  $\frac{3}{4}$  ounce Ice-X to liquid line (See Fig. 3.)
- 5—Open liquid receiver valve.

If a machine fails to operate normally within a short time, examine the valve for sludge, dirt, wax, or mechanical trouble, and if none is present, repeat treatment.

## CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words four cents each. Three consecutive insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

### REPRESENTATIVES AVAILABLE

I AM anxious to represent some reliable manufacturer as a factory representative. I am an engineer with 14 years of experience in this field. This time has been spent with two outstanding manufacturers of refrigeration and oil burning. I am thoroughly familiar with the New England and Middle Atlantic territories. May I submit you my qualifications? Box 1120, Air Conditioning & Refrigeration News.

### POSITIONS WANTED

AIR CONDITIONING Engineer, young and capable, desires engineering position. Thorough knowledge of air conditioning calculations. Experience on layout and installations of air conditioning equipment. Applicant is a university graduate, twenty-eight, married. Go anywhere, work any make. Excellent references. Box 1121, Air Conditioning & Refrigeration News.

### BUSINESS OPPORTUNITIES

BUSINESS FOR SALE: Thriving, established business with excellent earning record located in prosperous non-industrial mid-western city with 27,000 inhabitants. Top lines of air conditioning, commercial and household refrigeration and radio. Also radio and refrigeration service and amplifiers. \$5,000 cash required, balance payable from earnings. Other pressing interests of owner necessitate sale. Box 1119, Air Conditioning & Refrigeration News.

### EQUIPMENT FOR SALE

AVAILABLE FOR immediate sale twenty (20) Model "N" Frigidaire units at \$20.00 each, and ten (10) Model "C" Frigidaire units at \$35.00 each. Prices F.O.B. Philadelphia, subject to prior sale. We advise immediate action on this rare bargain. ASSOCIATED REFRIGERATOR PLANT, INC., 3028 W. Hunting Park Avenue, Philadelphia, Pa.

DEALERS AND SERVICEMEN—Offering Kelvinators, General Electrics, Westinghouses, Frigidaires, as is, as low as \$8.00 each, guaranteed fully equipped. Frigidaire compressor units, all sizes, guaranteed in perfect condition. We have brand new boxes, all makes, at below dealers' prices. Write for prices! LANDOR WAREHOUSE, INC., 53 East 10th Street, New York City.

HAVE FOR immediate cash sale approximately 200 electric refrigerators, Frigidaires, Kelvinators, and Merchant and Evans, complete, \$10.00 each, as is. ASSOCIATED REFRIGERATOR PLANT, INC., 3028 W. Hunting Park Ave., Philadelphia, Pa.

### REPAIR SERVICE

GENERAL ELECTRIC and Westinghouse hermetic unit replacement and rebuilding service. One year unconditional guarantee. All units are completely rebuilt on a modern production line, tested through every step of rebuilding with complete test equipment, subjected to exhaustive operation tests for wattage, efficiency, quietness and then Duco finished. General Electric DR1, DR2, and Westinghouse, \$30.00. Quotations furnished on other models. Quick service—guaranteed work. REFRIGERATION MAINTENANCE CORPORATION, 321-27 East Grand Avenue, Chicago.

DOMESTIC CONTROLS repaired: Ranco pencil \$1.75, Ranco box \$2.00, General Electric \$2.00, Tag \$2.00, Cutler-Hammer \$2.00, Penn \$2.00, Bishop Babcock, \$2.50, Majestic \$2.50, Penn magnetic \$2.50, G. E. Frigidaire \$2.50. In business over 20 years. Our name is our guarantee. UNITED SPEEDOMETER REPAIR CO., INC., 342 West 70th Street, New York City.

GENERAL ELECTRIC and Westinghouse hermetic units rebuilt. Guaranteed unconditionally for one year. Entire unit. Chipt evaporators reconditioned to look new. Modern shop testing methods employed. General Electric DR1, DR2, Westinghouse, \$30; DR3, \$35. Prices larger units upon request. GENERAL ELECTRICAL REFRIGERATOR SERVICE OF BROOKLYN, 1572 Coney Island Ave., Brooklyn, N. Y.

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

## Aerovox Moves To Plant In New Bedford, Mass.

NEW BEDFORD, Mass.—Aerovox Corp., manufacturer of condensers and resistors for radio and electrical uses, has moved from its former location in Brooklyn to a new plant here containing 433,000 sq. ft. of floor space.

The plant, which houses the factory and general offices of the company, is approximately 325 feet wide and 1,000 feet long, and is situated on approximately 10 acres of land.

A one-story and basement office building houses the administrative, general office, sales, and purchasing departments. Engineering and factory offices are housed in a one-story saw-tooth structure, and several manufacturing departments also are located in it. Rest of the manufacturing operation, and stockrooms, are located in a three-story building adjoining the one-story structure.

## MacDonald To Represent Speed Queen In East

NEW YORK CITY—Norman C. MacDonald has been appointed eastern seaboard representative for Speed Queen washers, ironers, and refrigerators, manufactured by Barlow & Seelig Mfg. Co., Ripon, Wis.

Mr. MacDonald for the past several years has been eastern district manager for Leonard, and for 10 years prior to that was divisional sales manager for Atwater Kent.

## Cates & Regan Organize Service Firm

FRESNO, Calif.—Household Appliance Service has been organized here by R. F. Cates and F. J. Regan to service appliances for home owners and dealers. The new firm will specialize in refrigeration and radio service work.

# SPEED

When we promise FASTEST SERVICE on all of your orders for

AIR CONDITIONING AND

REFRIGERATION PARTS AND SUPPLIES

we really are talking about the kind of service that never disappoints. 95% of all orders received by us are shipped THE SAME DAY.

## THE HARRY ALTER CO.

1728 S. Michigan Avenue, Chicago, Illinois

3 CHICAGO BRANCHES—NORTH, WEST, SOUTH

NEW YORK

DETROIT

CLEVELAND

ST. LOUIS

161-163 Grand St.

5013 John R. St.

4506 Prospect Ave.

2910 Washington Ave.

## The increasing Use of HIGH SIDE FLOATS

### Commercial



Every day we note an increasing tendency, in the dairy and ice cream industries, to use High Side Floats in preference to expansion valves. To meet this demand we offer a complete line of Aminco High Side Floats, with liquid receiver, for SO<sub>2</sub>, CH<sub>2</sub>Cl, and "F12." We are specialists in High Side Float production and are prepared to supply for any required Commercial or Domestic installation.

### Replacement High Side Floats

For domestic installations we offer a REPLACEMENT HIGH SIDE FLOAT service hitherto unavailable to the independent service man and jobber. These floats are equal, in every respect, to the floats they replace, and provide a new source of service revenue for the independent trade.

No. 368 and 367 are Standard Compressor Types, with overall heights of 8 $\frac{1}{2}$ " x 11" respectively. No. 369 is for refrigerators with hermetically sealed compressors.

Send for descriptive circulars. All good jobbers sell Aminco products.

## AMERICAN INJECTOR COMPANY

1481 Fourteenth Avenue

DETROIT, MICHIGAN

Pacific Coast—Van D. Clothier, 1015 E. 16th St., Los Angeles, Calif.

## Nameplates in Perpetual Motion



Constantly working for more sales. Without obligation let our artists create for you an embossed nameplate that will go far beyond merely identifying your product. Today—write for details that will make your plate part of your sales force.

## American Emblem Co., Inc.

Earle Blvd., Utica, N. Y.

Sales Offices: New York, Chicago, Philadelphia, Dayton, Detroit, St. Louis, Los Angeles. Representatives in all major cities.

1914—Our Silver Anniversary—1939

## Sherer REACH-IN BOXES and COOLERS

Increase your compressor volume by selling SHERER Reach-In Boxes, Coolers and Cases. Your customers prefer to depend on one source for equipment and service.

### The Sherer Franchise Offers

- ★ COMPLETE LINE of CASES, COOLERS & BOXES.
- ★ NEW EQUIPMENT constantly under development, opening new fields for compressor sales.
- ★ LAYOUT DEPARTMENT—layouts for food store modernization program without obligation.
- ★ ADVERTISING—Sherer Equipment advertising by mail and in leading trade publications.

Write for catalog and franchise details, mentioning territory desired.

SHERER-GILLET CO.  
MARSHALL, MICHIGAN

Manufacturers of Refrigerated Display and Storage Equipment



**NORGE**

STEP UP LADEES AND GENTLEMEN AND SEE THE MIGHTY MIDGET... HE WIELDS THE POWER OF A GIANT ON THE RATIONS OF A DWARF -- THE MIGHTY MIDGET... FEATURED BY NORGE FOR 1939

ER TAKIN' A BATH?

NO! I'M POWER COOKING THE NEW WAY WITH MY NEW NORGE

IT'S THE SYNCHRONIZER

THE MIRACLE HAPPENS HERE, GENTLEMEN -- AND NO OTHER REFRIGERATOR HAS IT.

IT'S C/M

IT'S THE NORGE SUPER-CONCENTRATOR -- SUCCESSOR TO THE GAS STOVE

# NORGE

NORGE DIVISION, Borg-Warner Corporation, Detroit, Michigan, Dept. T-1

"SEE THE NORGE BEFORE YOU SIGN!  
... THE HOTTEST\* LINE FOR '39!"

\*TO DATE, ORDERS BOOKED ARE 3 TIMES SAME PERIOD LAST YEAR!

TECH  
A  
The  
VOL.  
ISSU  
Ill  
On  
To  
Engi  
Fr  
U  
URE  
the s  
solve  
condit  
techni  
confer  
Univer  
and 9.  
Most  
ference  
field e  
problem  
meeting  
and sa  
cooling  
The  
mechar  
neering  
soring  
Severn  
commit  
"Equi  
Condit  
Prof. S  
depart  
ing, a  
System  
with by  
(Concl  
Fri  
of  
WAY  
of unit  
ton cap  
tion in  
offices,  
has bee  
Cabin  
insulated  
mounted  
tion. C  
small u  
23% inc  
The lar  
26 by 8  
Featur  
duty slo  
tem, and  
special  
water or  
heat. T  
structur  
to offer  
air-condi  
are add  
Install  
claimed  
few hou  
ence wi  
business  
cooling  
units can  
the addi  
winter u  
W  
CLEVE  
Bureau  
League o  
has real  
fects on  
is shown  
electric  
homes to  
has imp  
from 1 to  
One bu  
value is t  
building  
Tuesday  
To this  
builders  
wives. T  
meals be  
range, he  
tric cooke  
food.